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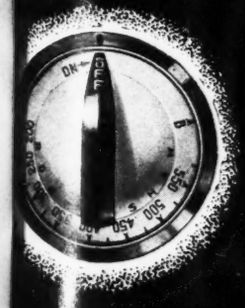

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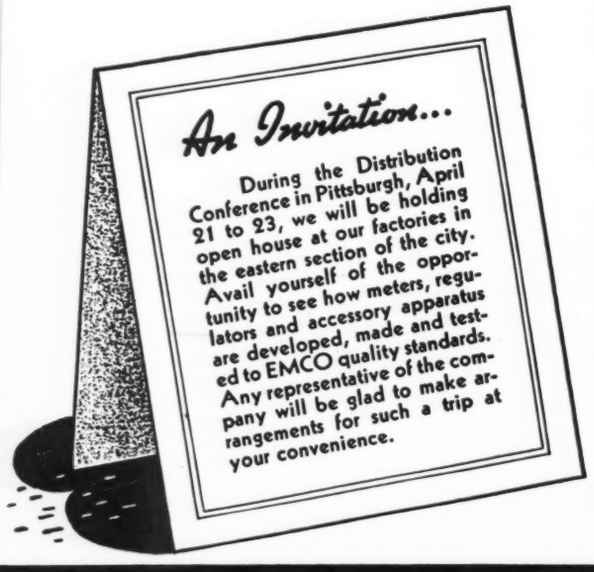
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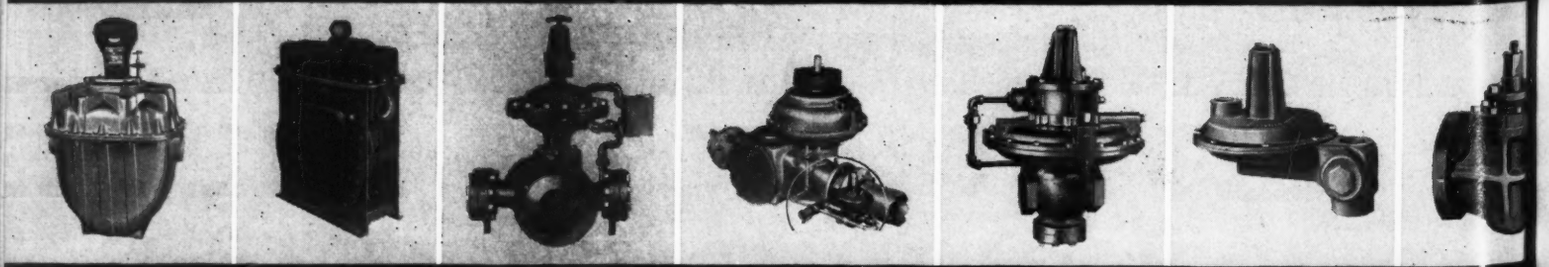

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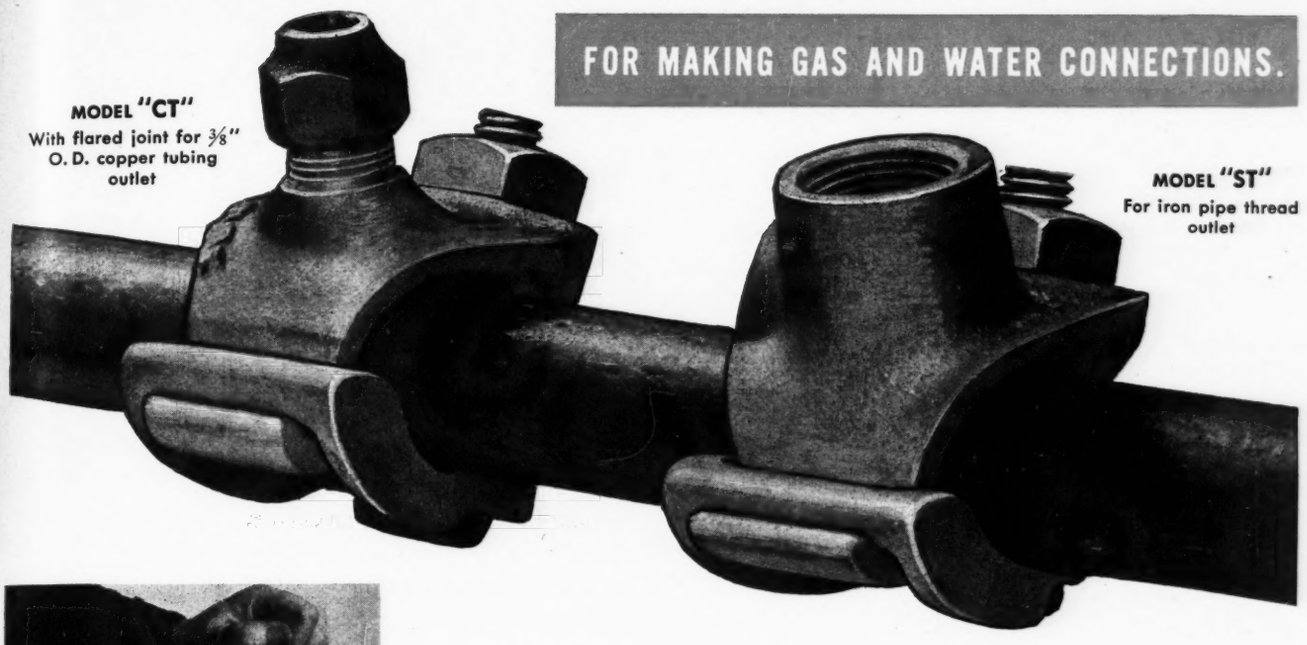

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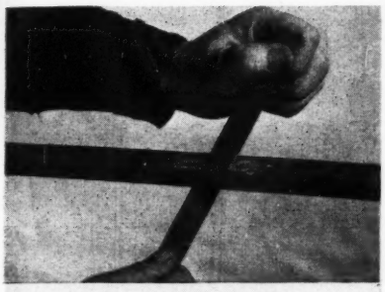
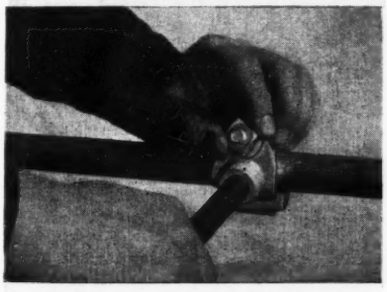
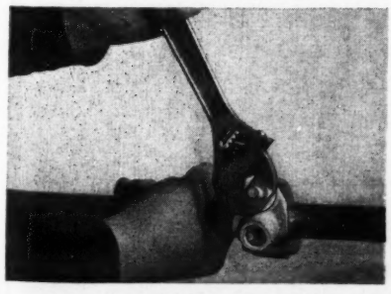


Clean pipe with file.



Apply tee in position for outlet.



Tighten bolt.

Drill hole in pipe.

Connect outlet.

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GAS

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Seventeenth Year of Publication

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GUEST Editorial

The Gas Industry Is Prepared

By D. A. HULCY
President, Lone Star Gas Co., Dallas, Texas

A GLANCE at the program for the 36th Annual Natural Gas Convention to be held in Dallas May 5, 6 and 7 shows to what extent our industry has developed the technique of natural gas service and also how well it is equipped to meet the ever-changing problems of modern life. In this convention program we find subjects of such variety that few industries could approach their number and comprehensiveness. Everyone attending, no matter what phase of the business he is engaged in, will find a storehouse of information, both on the general aspects of the industry and also the particular technical job which the individual may be pursuing in his work.

It is difficult in the midst of the daily task to determine what progress is being made, or whether there is any progress at all. Everyone is so busy with the problems of his immediate job that he is seldom conscious of the broader horizons or the total picture of the industry. To really comprehend what position we hold today we must look backward 10 or 20 years, and by comparing the past with the present, gain some measure of our progress. This view gives a really stupendous picture of the ever-expanding paths we have traveled. I think if we could read a natural gas convention program of say 20 years ago and compare the discussions of that day with the subjects of the forthcoming convention, the development shown by this comparison certainly would amaze us.

All about us now we hear the word "preparedness." In the natural gas industry, this always has been a familiar word. It does not take a national defense emergency to rush the gas industry into a state of preparedness. In this Southwestern section of the country, any winter, and probably every winter, is an emergency in the gas business. We must always be prepared to defend our domestic customers against the surprise attacks of cold weather. And by virtue of this routine preparedness, the national defense emergency found us ready. A dramatic example of this can be seen in the numerous army camps which have mushroomed up in various parts of Texas. Almost overnight the industry was called upon to supply these camps with the same type of gas service which for many years it had been rendering its city customers. In some cases, this meant delivering gas service equal in volume to that of a good-sized town. I am thinking, as an example, of the camp near Abilene, Texas, where the demand for gas is almost equal to that in the City of Abilene itself. The only reason we were able to supply this demand on short notice was that we have always been prepared for emergencies. It seems to me that if it had not been for this preparedness of the gas industry—preparedness both in facilities and personnel—these army camps could not have been built in Texas.

And now, facing the most serious year in the history of the world— facing no man knows what, the gas industry must continue to do its daily job and to be undaunted by tough problems. This industry always has had tough problems. With courage and determination it has always met these problems, and I am certain that the character which the industry has built through all these years will enable it to stand up against whatever may be coming in the future.

It is certain that our forthcoming convention, judging by the program of events, shows no letting down, even in the atmosphere of crisis that is about us, and I am hopeful that thousands in the industry will find it possible to attend this convention for the inspiration and revitalization that it will bring to all.

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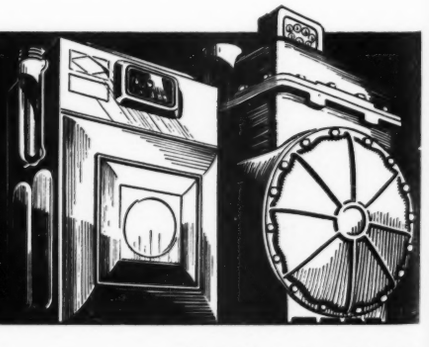


THERMALLY *Thinking*

Defense First

THOSE of us with an eye to showmanship and a keen appreciation of the glitter and commercial glamor that have always surrounded the old time gas appliance and equipment exhibits at the American Gas Association Conventions, will regret that this educational and colorful spectacle is not to be revived for the 1941 meeting in Atlantic City.

But the regret that we feel must be tempered in the realization that present day circumstances, over which no single group or industry has control, have necessitated the cancellation of similar exhibitions in other fields. The National Automobile Show for instance, which has been conducted without interruption for 41 years, will not be held this fall.

Various reasons are assigned, but the simple fact is that defense comes first, and there is no industry in the land that is not affected either directly or indirectly by that indisputable mandate. Shows and displays and exhibitions play an important part in the marketing of both necessities and luxuries in times of normal business activity. They provide the spectacular impetus that impels the buyer to buy, and stimulates the seller to sell.

Common sense tells us, however, that neither men nor machine tools nor materials can be diverted from the supreme national effort toward total defense. We can only accept as unavoidable the cancellation of this year's gas appliance exhibit, and look forward with greater anticipation to the progress and the improvements that will be drawn up in proud array for our future edification and amazement.

An Industry Alert

NO single event scheduled for the year 1941 can be as important to the natural gas industry and to the natural gas men who comprise that industry, as the thirty-sixth annual Natural Gas Convention which opens in Dallas the fifth of next month. For 22 years the natural gas meetings were held under the auspices of the old Natural Gas Association of America, and since 1928, they have been a function of the Natural Gas Section of the American Gas Association. But since 1928, as well as before that year, these annual meetings have been fundamentally and essentially by, of and for natural gas men.

With only one quarter of 1941 gone, it is already apparent that this is destined to be the biggest year that natural gas has ever enjoyed, from the standpoint of both sendout and revenue. And while it would be idle speculation to predict that the coming convention will be the biggest ever held from the standpoint of attendance, it cannot be gainsaid that it will be fraught with greater significance to the industry and to the nation that the industry serves than any of the preceding 35 annual convocations.

The prepared program of any convention is the important nucleus around which its formal sessions revolve, and from the standpoint of a realistic appraisal of the specific and particular problems selected for treatment, the current program is second to none. It is not by accident, in these unusual and troubled times that the accent has been taken from the sales side of the gas picture, and placed where it belongs, as far as natural gas is concerned, on the techniques and methods to be followed in assuring the widest and most dependable distribution, and the wisest and most effective utilization of the fuel so essential to American life and American defense. Outstanding are the titles of papers and the names of their authors on subjects of transmission, production and utilization. Industrial and commercial sales considerations will lean heavily toward discussion of the larger heating and power operations, the operations that are being called upon to increase the industrial plant output of the nation 60% within the next few months.

Such a convention program, gratifying as it should be to its instigators, represents still more to the country whose continued safety and ultimate triumph it is destined to insure. It reflects a great and an indispensible industry, not *preparing for* action, but *in* action; not dissipating its energies on the mistakes of yesterday, but preparing its total resources for the challenge of tomorrow. Free of the unseemly brawling that has hampered the effort and cast suspicion of selfish opportunism on both labor and management in other fields, natural gas has taken in its stride the challenges of war with the same superb competence that it has fulfilled the obligations of peace.

We confidently predict that the hundreds of natural gas men who attend Dallas will leave for their home, not only better schooled in the techniques of their calling, but endowed with additional knowledge that will enable them better to play their individual parts in the industry's role in national defense.

In GAS for May

FOR the past 15 years GAS has published in May its Annual Natural Gas Review issue. The 16th number in this series—the 1941 edition of the Annual Natural Gas Review issue of GAS—will include, among others, the following outstanding features:

1. Procedures in changing over from manufactured to natural gas: This article, which will be a comprehensive review of changeover operations for the past 15 years, will cover historical background; technical, distribution, and utilization aspects; an appraisal of the "satisfactoriness" of past changeovers; an evaluaton of expected future activities in this field.

2. Statistical Review: Through tables, graphs, and charts, this article will present complete information on the current position of the Natural Gas Industry—its present markets, its sales achievements, its physical properties, its future potentialities.

3. Pipe Line Construction Procedure. This feature is based on data derived from the past experience and operating methods of one of the largest natural gas transmission companies in the United States. Dealing with detailed specifications and illustrated by numerous drawings, this article is indispensable to the library of every pipe line construction engineer.

4. Pipe Line Construction Survey: Throughout the past months GAS has been gathering information in great detail regarding pipe line and compressor station construction activities, both those completed in 1940 and those planned for construction during the current year. The response to this survey has been most gratifying, and the facts as presented in the May issue will be the most comprehensive and complete of any survey of this nature that has yet been made.

It is the hope of the publishers of GAS that this array of valuable information on the Natural Gas Industry will prompt every man active in that industry not only to procure but also to preserve the 1941 Annual Natural Gas Review Issue of GAS.

Carbon Black

By O. D. HALL

IN this era when the wheels of war and of peace roll on rubber, the carbon black manufacturing industry is coming into the forefront of public attention. In 1939, 89% of the domestic sales of carbon black were to rubber companies. These companies produced 57,078,000 casings in 1939, states the Rubber Manufacturers Association.

It also is significant that carbon black manufacturing, once looked upon in some quarters as wasteful and constituting a threat to natural gas supplies, is now authorized under state laws and by licensing systems through regulatory commissions in several natural gas producing states. After open hearings, the commissions in these states, before issuing licenses, determine whether or not the use of the gas for the manufacture of carbon black will constitute waste of this most valuable and irreplaceable natural resource.

Acting under gas conservation statutes enacted in 1889, 1931, 1933, and 1935, the Texas Railroad Commission authorizes the utilization of natural gas in the manufacture of carbon black under a licensing system. It has adopted a set of rules and regulations, the first of which prohibits the use of natural gas in the manufacture of carbon black where "There is any reasonable expectation, present or in the near future, of the utilization of the gas for domestic or manufacturing purposes."

The regulations authorize the issuance of permits, valid for only one year, when it appears by evidence at a hearing before the Railroad Commission, that it is advisable as a conservation measure to allow natural gas, after the gasoline content has been extracted, to be burned for the purpose of extracting carbon black, and where it is shown that the gas territory, which furnishes the supply, is not sufficient in volume to justify transportation of the gas for domestic and industrial use, or is so situated as to preclude a reasonable future demand for the gas in domestic and industrial consumption. The gas may also be used for carbon black manufacturing where it is impractical to seal in the gas, or conserve it in its stratum, until it is practical to transport and use it in domestic and commercial consumption.

A provision is added that, where it shall be established that residue gas from gasoline plants is wasted and there is no public need or demand for the gas, the commission, following a hearing, may issue permits good for five years to manufacture carbon black from gas after the gasoline content has from gas after extracting the gasoline.

Under the 1935 Texas statute, "sweet" gas may not be used in the manufacture of carbon black. The railroad commission regulations define "sweet" gas as, "all natural gas excepting 'sour' gas and casinghead gas." "Sour" gas, subject to restrictions fixed by the commission regulations, may be used in manufacture of carbon black. The Texas statutes and commission regulations define "sour" gas as, "gas containing more than one and one-half grains of hydrogen sulphide per 100 cu. ft., or more than 30 grains of total sulphur per 100 cu. ft.; or gas, which in its natural state, is found by the commission to be unfit for use in generating light or fuel domestically."

In Oklahoma no law has been passed particularly applying to the manufacture of carbon black. The oil and gas conservation statutes, however, give the Oklahoma Corporation Commission authority to prohibit the wasteful utilization of natural gas. Under these statutes, the commission, in 1920, took jurisdiction over carbon black manufacturing plants, and decided that such plants could be established after hearings and authorization by the commission, only where it was shown that utilization of the gas for such purpose did not constitute "waste" under the meaning of Oklahoma law.

The Oklahoma supreme court later upheld the right of the commission to issue or deny permits to carbon black manufacturers. Following this decision several carbon black permits were issued.

In one case the Oklahoma commission based its permit to a carbon black company on the ground that there was no immediate or prospective market for the natural gas which the company proposed to use and, so long as the market was absent, the permit would be continued in force. In other cases the Oklahoma commission permitted only the use of "sour" gas or high sulphur gas, not suitable for domestic or industrial distribution, or which could not be used for repressuring purposes.

Leaders of the carbon black industry contacted by the writer of this article, were strong in their contentions that their business is one of prime economic importance. Osman E. Swartz,

From the air we see a carbon black plant. Such a plant, manufacturing some 15,000,000 lbs. per year, is made up of hundreds of sizzling hot buildings, covering acres of Texas prairie and housing millions of small, natural gas flames.

LEFT: "Top Drafting" compensates air flow for day-to-day weather variations. CENTER: "Bottom Drafting" compensates for month-to-month climatic variations. Driven wedges raise or lower whole hot buildings, adjust to accuracy of 0.016 in. the slit between bottom of framework and foundations. This continuous opening allows air to flow to flames uniformly without quality-destroying flicker. Cabot workers move slowly between these frying-hot buildings lest too rapid heat transfer fry them. RIGHT: To produce certified quality blacks, gas and air flow to flames are maintained uniform. Automatic instruments, such as pressure regulators, control gas quality and flow.

general counsel, United Carbon Co., Charleston, W. Va., expressed the opinion that, "The present world on wheels would not be possible if carbon black of the channel type were not available to increase tire mileage."

The February 24, 1938, issue of *Oil and Gas Journal* quoted from a paper delivered by J. D. Gill as follows: "The use of natural gas in the production of carbon black has had many severe critics and it is still a question of whether or not gas should be used in the manufacture of carbon black. However, the use of carbon black in the manufacture of automobile tires alone has increased the mileage of the tires two and one-half to three times, and conservatively speaking, the saving to the public in longer life of tires over the last 15 years has been more than 40 times as much as the value of the natural gas employed for the production of all of the carbon black manufactured in the country, even when the gas is valued at the average price realized for gas from the same source for domestic heating purposes."

R. G. Allen, general manager, The Cabot Co., Pampa, Texas, also declared that the carbon black industry will continue to be of great economic importance, "unless there are changes in the technology of rubber compounding and unless other pigments are developed which are equal to or superior to carbon black in rubber and in news ink." He referred to the export figures, as carried in the 1940 Minerals Yearbook of the United States Bureau of Mines which he said show the economic importance of carbon black. "It is especially interesting," he said, "that unusually high deliveries of our product to nations preparing for war, or at war, were made in the face of a deliberate effort on their part to curtail, as much as possible, the exhaustion of their credit balances in this country."

The yearbook reported that exports of carbon black to the United Kingdom increased about 50% in 1939 to a total of 66,215,000 pounds. Exports to France gained moderately in 1939. There were notable increases in shipments to Brazil and China in that year. Sales of carbon black to ink companies increased 55% and there was a material rise in the sale of carbon black to paint companies, as well as a 50% increase for miscellaneous purposes in 1939 over the previous year.

Of the 49 carbon black plants in the United States in 1939, 38 were operating in Texas, seven in Louisiana, three in Oklahoma and one in Kansas. Thirty-two carbon black plants are located in or near the great natural gas fields of the Texas and Oklahoma panhandles.

Information obtained for *GAS* from three of the big carbon black manufacturing companies, gives an insight into the kind of material used, the production, processes and markets of some of their plants. These companies are: The Cabot Co., of Pampa, Texas, having plants at Eliasville, Kermit, Kingsmill, Skellytown, Pampa, Stinnett and Wickett in Texas, and in Seminole County, Okla.; The General Atlas Carbon Co., of New York City, with plants at Pampa, Texas, and Guymon, Okla., and the United Carbon Co., of Charleston, W. V., with an Oklahoma plant at Sayre, in Beckham County.

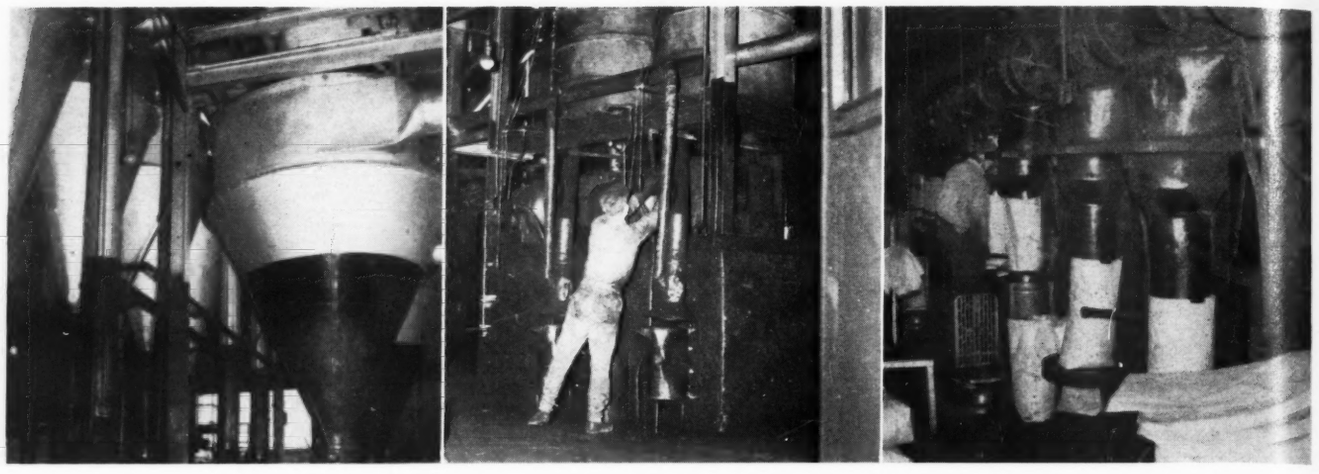
The Cabot companies, at the Seminole county plant, employ the channel process. The plant consists of 30 hot buildings, each containing 12 eight-inch channels, 140 ft. long. Gas consumption there is 6,000,000 cu. ft. per day. Daily carbon black production is 18,000 pounds and the average yield is three pounds of carbon black per M c.f. of gas.

Fractionator vapors from gasoline plants in the vicinity are utilized in the plant. These vapors consist principally of butane and propane fractions,

• CARBON BLACK manufacturing has been referred to as a tiny industry with mighty implications. Its role in the National Defense program will surely be as inconspicuous as has been its participation in peace-time industry. Although the total monetary value of the world's carbon black production has rarely, if ever, exceeded 18 million dollars, the material is so essential to industries in which it is used, that dollars and cents figures are of small significance.

Carbon black is especially useful in compounding rubber and particularly those items of rubber goods in which high tensile strength and abrasive resistance are of extreme importance. There is no other known pigment that so generously imparts to rubber the properties that have made the remarkable developments of recent years. To the extent that caterpillar treads, truck tires, and certain types of mechanical rubber goods are essential items of defense material, carbon black will play its part. The usefulness of carbon black in other industries, notably ink, plastics, paints, and lacquers, is of less obvious pertinence, but here again the peculiar properties of this pigment are of material value in reducing time and cost of manufacture and ultimate usefulness of these other products.

With the exception of small factories in Formosa and in Europe, all of the world supply of this material is made in the United States and is limited to those areas in which natural gas is available in abundance and at low prices. Within the borders of the state of Texas is made over 80% of the present world supply. Factory capacity is installed or can be quickly made available to take care of any predictable defense needs of this nation and of such allied countries as might join us in some military effort. — R. G. ALLEN, general manager, The Cabot Companies, Pampa, Texas.



LEFT: In huge cyclone bolters, hundreds of thousands of pounds of carbon black are mixed with air every day to remove grit, never explode. Experiments indicate it never will. CENTER: Spheronicators churn black in their interior, form tiny, free-flowing, dustless spheres. No water or other ingredients are added to this purely mechanical process, allowing Cabot Spheron to retain the desirable properties of the original black. Cabot worker is dumping batch. RIGHT: Black pullers pack fluffy material in double thickness, natural kraft, paper sacks. Later sacks are overslipped with black bags to prevent leakage in transit.

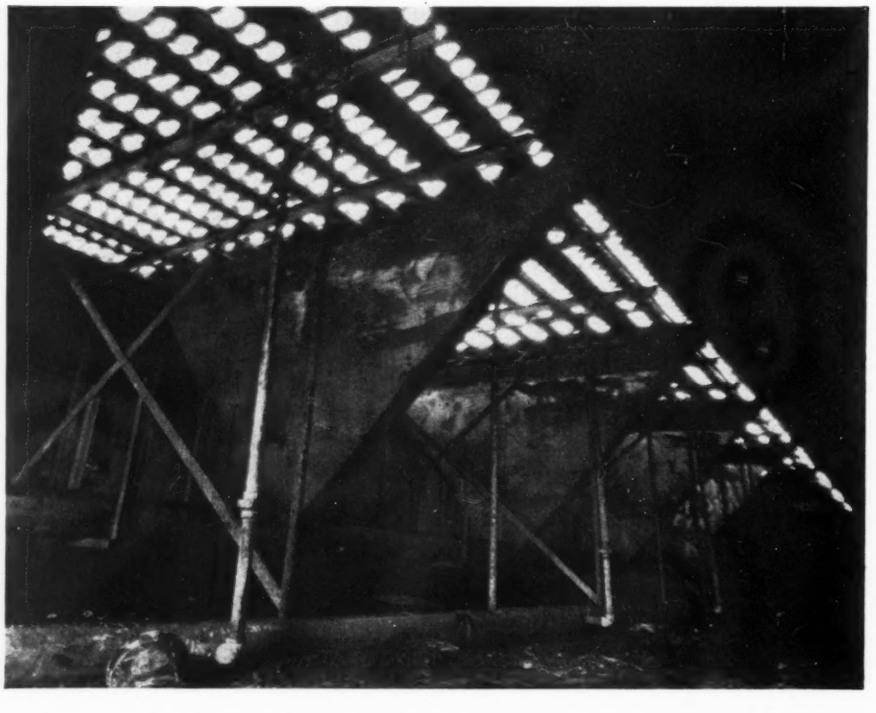
which ordinarily would be wasted into the air, in the event they were not utilized in the manufacture of carbon black, reports R. G. Allen, of Pampa, Texas, general manager for the Cabot companies. These vapors, he says, are slightly sour and are burned in the factory without purification.

The General Atlas Carbon Co., of New York City, started operations with a plant at Pampa, Texas, in 1928. A second plant was built at Guymon, Okla., in 1939. The company operates a patented process which it says is entirely different from that used by any other producer of carbon black. "Our material is not a true carbon black and we prefer to classify it as chemical carbon," explained Carl J. Wright, vice president. "There is no competition between our material and the material produced by the so-called channel process. The black produced by our process is particularly useful in such rubber compounds as footwear, insulated wire and mechanical rubber goods. Practically all our output is sold to the rubber industry. We have maintained a price of three cents per pound for the past five years. Our Oklahoma plant uses dry sweet gas obtained from the Cabot Carbon Co."

The Guymon plant puts out its product in a pellet form which is sold under the trade name of "Pelletex." The black is produced by a partial combustion of natural gas under carefully controlled conditions in a specially designed furnace. The black is separated from the gases by a Cottrell precipitator. The company also produces, by a similar process, a product known as "Gastex."

Company literature describing the "Gastex" process, states that from the time the natural gas is admitted to the furnace all resemblance to any other known process ceases. In the furnace, "Gastex" is formed by incomplete combustion and the hot gases, carrying carbon black in suspension, pass out through a horizontal cooling pipe, where much of the heat in the gases is radiated into the air. A vertical cooler sprayed with water completes this cooling process.

Each flame deposits one ounce of black per day. The black is scraped from a slowly moving channel into hoppers and conveyed to a packing house.



The carbon particles are removed from the gases through the Cottrell electric precipitator process, which utilizes a high voltage unidirectional current to create an electric field through which the carbon laden gases must pass. In this process the particles of black are agglomerated and adhere to plates, or are carried to the cyclone dust collector where the final separation is made.

The Guymon plant of the General Atlas Carbon Co. consists of two producing units having a combined capacity of 20,000 pounds per day. It burns about 70,000,000 cu. ft. of gas per month and obtains an average yield of nine and one-half pounds per M c.f. The 1940 Yearbook of the U. S. Bureau of Mines states that the average yield of carbon black in the United States rose from 1.47 pounds per M c.f. of gas in 1938, to 1.51 pounds in 1939.

The United Carbon Co. plant, lo-

cated at Sayre, Okla., utilizes natural gas produced in the Sayre and Erick fields of Beckham County, Okla. This gas has first been processed for the extraction of natural gasoline and other hydrocarbon products such as propane and butane. The residue gas is burned in a plant of the channel type. In this process the flame from a tip, or burner, is impinged upon a plate or channel, leaving a deposit of carbon black. All but 12% of the carbon black produced in the United States in 1939 was manufactured by the channel process, according to U. S. Bureau of Mines.

The quantity of gas used in the Sayre plant is about 23,000,000 cu. ft. per day, from which is produced about 33,000 pounds per day of carbon black, or a yield of approximately 1.45 pounds per M c.f. of gas.

The Sayre, Okla., plant also manufactures a coarse salt which it sells for industrial purposes which also is processed electrolytically for the production of caustic soda. Heat resulting from the burning of natural gas in the carbon black plant is used to evaporate brine to produce these results.

The 1940 Minerals Yearbook of the U. S. Bureau of Mines showed that domestic sales of carbon black in 1939, totalling 356,705,000 pounds, were 47% higher than in 1938 and 14% above the previous high of 1936. Last year's sales were divided as follows: To rubber companies, 89%; ink companies, 6%; paint companies, 2%, and for miscellaneous purposes, 3%.

Natural Gas Pipeline Co. of America Plans 219-Mile Looping Project

NATURAL Gas Pipeline Co. of America has awarded contracts for the construction of three schedules of 26-in. pipeline, embracing 219 miles of pipe, looping portions of its main line extending from the Texas Panhandle to the Chicago District, and on or about April 1 will award contracts for two additional schedules embracing 184 miles of pipe.

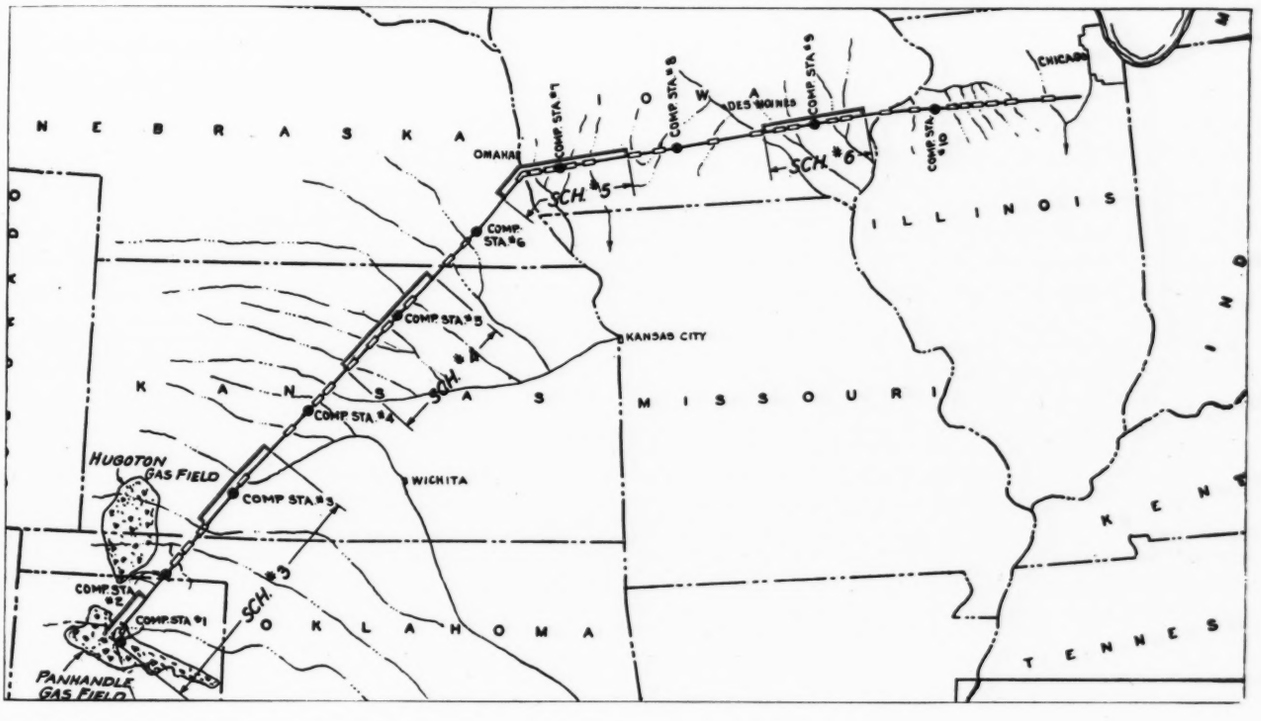
W. A. Bechtel Co., San Francisco, Calif., has been awarded the contract to construct 33 miles of 26-in. pipeline in the state of Texas and 88 miles of 26-in. pipeline in southern Kansas. C. S. Foreman Co. of Kansas City has received the contract for the construction of 98 miles of 26-in. pipeline in northern Kansas. This company has also received the contract to construct eight multiple line river crossings. Seven of the crossings are in Kansas and one in Nebraska.

Under the specifications, W. A. Bechtel Co. will utilize one main line gang to construct the southernmost section later moving on to construct the second schedule. Under original plans, pipe shipments for the first section were to start March 15 and for the second section on May 4. Shipment on the C. S. Foreman schedule is to start March 28. The line is of a solid weld type of construction.

Traveling machines of the Crutcher-Rolfs-Cummings type will be used for applying hot enamel. W.K.M. cleaning and priming machines equipped with steel cutters and brushes for cleaning the 26-in. pipe will be furnished by the contractor. A line-up clamp of the type designed by Natural Gas Pipeline Co. in collaboration with the A. O. Smith Corp. will be used in satisfactorily lining up the pipe. A. O. Smith pipe will be used in the project with the valve contracts being awarded to Merco Nordstrom Valve Co. for automatic closing valves and to Crane Co. for wedge type gate valves. The automatic closing valves will be installed at approximately every 10 miles and at river crossings.

The present activity is the company's second major construction project within recent months. During the latter part of 1940, Natural Gas Pipeline Co. built a 20-in. line from its Geneseo compressor station in Illinois on the main Texas Panhandle-to-Chicago line in a northerly direction to the Wisconsin state line. (*GAS*, December, 1940. pp. 13-16.)

General system map of the Natural Gas Pipe line Co. and Texoma Natural Gas Co. The sections in color are involved in the current looping program, and are now under construction or to be constructed.



A Compressor Plant of Modern Design

By F. S. YOUNG

Engineer, Panhandle Eastern Pipe Line Co., Kansas City, Missouri

CONTINGENT with a 1940 looping program to provide adequate additional capacity for increased demands of natural gas in existing markets, Panhandle Eastern Pipe Line Co., Kansas City, Mo., has recently completed a 3900 hp. gas compression plant of a most modern design, located in Hansford County, Texas, near the Oklahoma state line.

Hansford Station, placed in operation December 15 with compressor facilities consisting of single stage horizontal compressor cylinders directly connected to six 650 hp., 300 rpm., angle type gas engines, is of a design heretofore unusual for heavy duty main line compressor service handling large volumes of gas.

Prior to the construction of the station, various engineering studies of main line capacity for present and future commitments were made and as a result the station was designed to handle 160,000 M c.f. of gas per day at 450 lbs. discharge pressure and 1.5 compression ratio.

These studies indicated that a location midway between the company's Sneed station in Texas and Liberal station in Kansas would adequately meet present and future requirements. The site being fixed within certain geographical limits, careful consideration was given to a terrain that would provide proper surface drainage, a stable subsoil, and an abundant water supply. The site as chosen is picturesque, located on the gently sloping floor of a narrow valley with high bluffs extending far on either side. The station is quite remote from good shopping centers, the nearest being some 30 miles distant. This inconvenience for the operating personnel was instrumental in the company's decision to build seven houses on the west slope of the valley overlooking the plant.

All engineering, design and drafting was performed by members of the Panhandle organization. A basic station layout was decided upon from which detailed drawings were developed. Some 60 completed drawings, as submitted to contractors for bidding purposes, were prepared from July 1st to September 15th, giving a general idea of the limited time allowed for basic layout and design. Over 100 construction drawings were finally required to complete the job. Rigid specifications covering all items of equipment and materials were written and strictly adhered to during all phases of construction, which was actually begun October 1.

Buildings

The plant consists of a main building to house the six gas engine compressor units, an auxiliary building to house auxiliary machinery and equipment, and a gas measurement building, all with structural steel frame covered with corrugated asbestos siding and roofing. (See Fig. 1 and Fig. 2.)

Windows of steel sash construction are nearly continuous around the three buildings, providing maximum amount of light with proper ventilation. Continuous type ridge ventilators are furnished to insure proper circulation of air and easy escape of possible gas vapors.

General dimensions of the building are:

Main Compressor Building: Eight 12-ft. bays, or 96 ft. center to center of end columns, 48 ft. wide and 16 ft. clear height.

Auxiliary Building: Six 16-ft. bays, or 96 ft. center to center of end columns, 36 ft. wide and 15 ft. clear height.

Gas Measurement Building: 13 by 25 ft.

An office building of frame construction covered with asbestos shingles was provided, matching well with the industrial type plant structures. In addition to the chief engineer's office the building contains an assembly room, utility room equipped with a gas furnace and a washroom.

All building walls of reinforced concrete were built with separate footings, independent of equipment foundations within the structures.

Main Compressors

The main units were set on heavily reinforced concrete foundations securely doweled into an 18-in. continuous concrete mat poured well below frost line. The economy of an angle type compressor installation compared with the large horizontal twin-tandem compressor installation, as far as foundations are concerned, can well be shown here. The angle type compressor foundation requirements are approximately .10 cu. yds. of concrete per B.H.P. as compared with .30 cu. yds. of concrete per B.H.P. for the twin-tandem horizontal compressors.

The main units consist of six 650 hp., 300 rpm, vertical, V-type, 8 cylinder, four cycle, single acting gas engines, direct connected to two horizontal, cross-head type, double acting compressors, with a 10⅝-in. bore and 15-in. stroke.

The power cylinders, with 14½-in. bore and 18-in. stroke, are equipped with cast iron alloy honed liners of the wet removable type. These liners, being clamped on top and free to expand on the bottom, have a tendency to keep a more nearly perfect shape since they are not distorted by head or load stresses, thus reducing wear of rings, pistons and cylinders.

Power cylinder heads are of the valve-in-head type and have silchrome inlet and exhaust valves with chromium-plated stems. The power cylinder walls are lubricated by the splash system from the crankcase oil. Control rings on the piston maintain the proper film of oil on the wearing surface, reducing oil consumption to a minimum.

A full force feed type lubricating system consisting of a spiral gear oil pump directly connected to the crankshaft provides force-feed lubrication to all main, crank pin, piston pin, wrist pin, crosshead pin and camshaft bearings. A separate force feed lubricator has individual adjustable sight feeds to each compressor cylinder and stuffing box.

The fuel system consists of a sensitive low pressure regulator and a constant quantity mixing valve that automatically maintains the correct air-gas mixture at designated speeds and loads.

The compressor cylinders are designed to operate at a suction of 275 lbs. to 325 lbs. and a discharge pressure of 400 lbs. to 450 lbs. All cylinders are equipped with clearance pockets, valve lifters and internally built by-passes, these tending to make a flexible station readily adaptable to changing pipe line delivery conditions.

Compressor cylinders are of such diameter that under maximum load conditions the rated hp. of the engines will not be overloaded more than 10%.

Such a relationship of compressor diameter to maximum brake hp. tends to balance load conditions through a year's operation, utilizing a minimum of equipment when loads are light.

All machines are equipped with filters on the free air combustion intake, and an automatic relief valve in each air filter riser to combat the severe dust conditions of the Texas Panhandle.

Each engine is equipped with automatic mercoid controlled safety devices designed to shut the units down in case of failure of the governor, oil circulating pump or water circulating system.

All units are equipped with vertical air cooled mufflers projecting through the roof. These mufflers are enclosed in a casing 3 in. greater in diameter than the exhaust pipe. Heat produced in the upper portion of the muffler plus a venturi arrangement near the top of the exhaust stack causes a natural circulation of air to flow upward between the casing and exhaust, cooling the muffler and at the same time acting as a heat insulator within the building.

Elevated walkways of grating on structural steel frames are continuous around each engine and throughout the length of the building. These platforms provide easy access to power cylinder heads and engine controls.

Precise instruments for station control are located on gage boards in the compressor building, auxiliary building and office. A continuous 8-in. trolley beam extends over each line of power cylinders to facilitate engine repairs when necessary.

Auxiliaries

Auxiliary building equipment consists of two 125 kw electric power generating units, one 30 kw generating unit, switch gear cubicle, one 30 hp. boiler for space heating, five centrifugal circulating water pumps, two V-type, air cooled air compressors, water softener, oil centrifuge, motor driven drill press and tool grinder.

Each of the 125 kw units has the capacity to carry continuously the power and lighting load of the station. These are 440 volt, 125 kw, 60 cycle, 3 phase, generators, equipped with a 125 volt, 5 kw exciter, driven by a 190 hp., 3 cylinder, vertical engine.

A small 440 volt, 3 phase, 30 kw generator powered with a 70 hp. gas engine, is provided to carry lighting load and fractional power loads when the large generators are shut down.

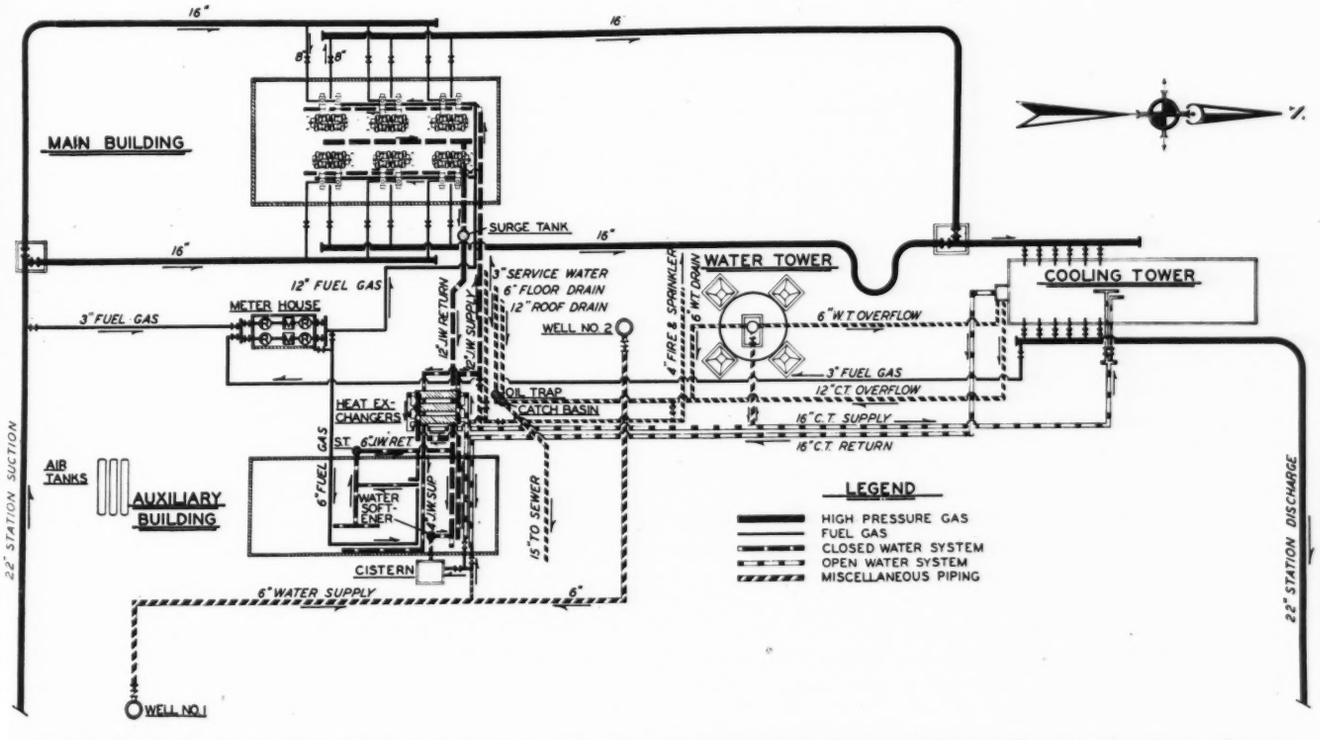
A totally enclosed type switch gear cubicle with all instruments flush mounted is provided, consisting of three generator panels, one load panel and one lighting panel. Dry type transformers are mounted in the compartment with the lighting panel.

An automatically controlled gas fired low pressure boiler furnishes steam for unit heaters suspended from trusses in the main building, auxiliary building and meter building. Heaters operate under 15 lbs. of steam pressure and are automatically controlled. Condensate is returned to the boiler by means of a motor driven condensate pump located on the floor of the pump pit.

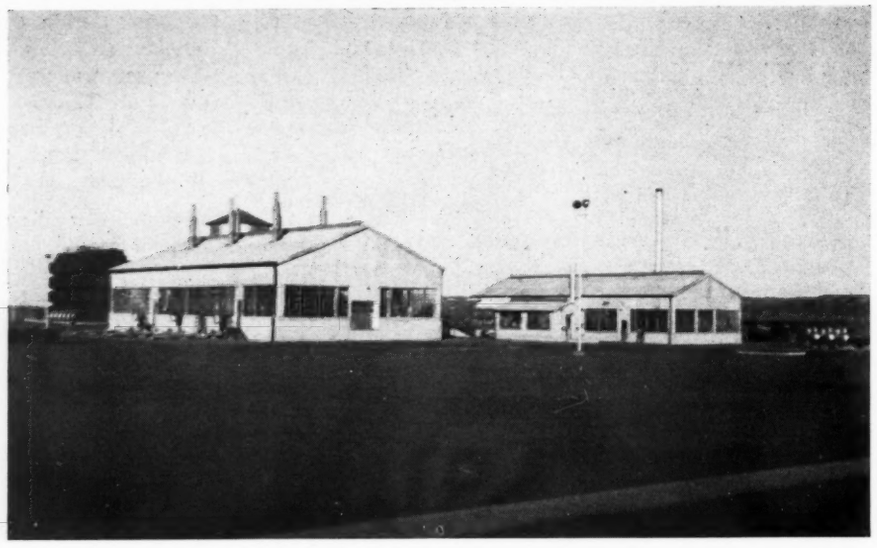
Water pumps for jacket water and cooling tower service are located in a pump pit in one end of the auxiliary building. One 1000 gpm., 1150 rpm., 40 ft. head, pump, circulates the jacket water over the engines. Two 1250 gpm., 1750 rpm, 85 ft. head, pumps circulate water to and from the cooling tower. A spare pump was installed as a standby for each system.

The pumps are electric motor driven centrifugal units, controlled by separate switches from the power panel. All pumps are provided with special cut-out switches to prevent injury to motors from overloading in addition to hand-off automatic pilot switches to permit manual operation of any or all pumps, if required, due to load changes.

Air compressor equipment consists of two 2-stage, air cooled, V-type, starting air units with piston displacement of 41 cfm. at 510 rpm. One machine is directly driven by an induction motor with automatic start and stop control and an automatic unloader. The other machine, a standby unit, is driven through V belts from a 15 hp., 4 cylinder, water cooled gas engine complete



Here is the diagrammed layout of the compressor station recently constructed by the Panhandle Eastern Pipe Line Co., Kansas City, in Hansford County, Texas.



General view of Hansford station, looking toward the northeast.

with constant speed unloader. Air is delivered from the units into three welded, stress relieved, air receivers that float on the compressor discharge.

Piping

Gas from the main line flows into the station through a 22-in. suction. This line divides near the south end of the main building and extends as double 16-in. underground suction headers along either side of the building. Gas is delivered from the suction headers to the compressor cylinders through single 8-in. suction lines to 12-in. intake headers above the compressors.

The gas is discharged from the compressors into 12-in. discharge headers directly below the cylinders, thence through single 8-in. discharge lines into 16-in. discharge headers outside the building. These headers extend along either side of the main building to a common header at the cooling tower. Gas flows upward from the cooling tower header, through six cooling sections where the gas is cooled before being discharged into the main line.

Piping for gas, water, air, steam, oil and drain services is grade "B" seamless line pipe in sizes 16 in. or larger and grade "A" seamless line pipe for smaller sizes. All piping except a nominal amount of underground straight run piping was shop fabricated and shipped to the job complete, ready for installation. This unusual feature cut field welds to a minimum and speeded up the erection of completed piping to such an extent that it would be safe to say that a month's construction time was saved during the progress of the job over and above the time that would have been required for the field welding of the same amount of piping.

All flanges, as installed for high pressure gas and air service, are series 30 forged steel Vanstone type. Flanges for fuel gas, water, steam, oil, drainage and air intake lines are series 15 forged steel Vanstone type.

Class "B" alloy steel stud bolts are furnished for bolting between compressor cylinder discharge and gas coolers, and between the gas coolers and main gas discharge header leaving the plant. Carbon steel hexagonal head bolts are used on all other services.

All ditches were dug with a standard "48" Buckeye pipe line ditching machine. This procedure, unique to station construction, proved to be much quicker and less expensive than hand digging and gave a uniform, straight ditch with a good circumferential bearing surface for the bottom of the lines. Backfilling was completed efficiently with a bulldozer.

Water Wells

A cooling water supply is furnished by two deep well pumps, automatically controlled and tested to flow 300 gpm. Preliminary to the drilling of the permanent wells 10 test holes were drilled to insure an adequate water supply. Tests showed two distinct water strata, one 100 feet below ground level and the other 260 feet below ground level. The upper stratum of sand although indicating good production, was not believed to be capable of furnishing a sufficient, sustained volume of water for station consumption. The lower stratum of sand, however, as shown by separate pumping tests, had a greater production capacity, which, when combined with the upper stratum should assure the plant of a continuous supply of all water requirements under any conditions. The lower water bearing structure was clearly defined by the numerous tests as limited to a narrow vein which could have remained undiscovered had no tests been made.

Two permanent wells were drilled into the two producing sands 300 ft. apart, each well producing over 300 gpm. when tested. The wells were drilled 20 in. in diameter except through the two water bearing formations where they were reamed to 36 in. in diameter. Opposite the water bearing stratum in each well, 40 ft. of 12-in. No. 6 gage silicon bronze screen was furnished, a 12-in. casing connecting the screens and extending to ground level. Selected gravel was pumped between the casing and drilled hole to complete the gravel wall wells. A concrete seal was placed in the bottom of each well.

Turbine pumps, rated at 300 gpm., with a pump setting of 100 ft. and a head above the base plate of 60 ft. were installed. Each was equipped with a 25 hp., 1750 rpm, 440 volt, weather and dust proof motor, set unhoused on a concrete slab. A 30-ft. steel derrick was erected over each well to facilitate pulling of pumps when repairs are necessary.

Cooling Water

Jacket water from the power and compressor cylinders is circulated by a 1000 gpm. centrifugal pump operating in a closed system. Hot water at 150 degrees from the engines is pumped through shell and tube intercoolers where the water is cooled to 110 degrees by cool raw water circulating through the tubes of the cooler. The water is then pumped through the engine jackets and into a surge tank from which the suction of the jacket water pumps is connected to complete the cycle. Two surge tanks are required in the closed system, a 48-in. diameter tank for the main units and a 22-in. tank for the auxiliary engines. Treated makeup water is pumped into the system automatically as required, a float control switch holding the water level at the top of the large surge tank starting and stopping a centrifugal pump that discharges water through a water softening plant into the system.

Untreated water at an inlet temperature of 78 degrees is pumped at the rate of 2500 gpm. counter-flow to the jacket water circulation through the tubes of the intercoolers where the temperature is raised to 90 degrees by absorption of heat transferred from the jacket water. The water is then circulated over an atmospheric cooling tower where it is cooled. The cooled

water thence sprays down over gas coolers located in a coil shed above the tower basin, cooling the discharge gas as it flows over the coils. From the tower the water drains back to the suction of the raw water pumps at initial temperature conditions.

A float control switch in the cooling tower basin connected to the water well pumps maintains a designated water level in the basin, adding makeup water to the system from the wells when necessary.

Gas is cooled by six single-pass cooling sections located in the coil shed of the cooling tower. These coils to cool the discharged gas below 90 degrees F. before entering the main line.

Fuel Gas

Fuel gas is delivered to a meter house through separate 3-in. lines from either suction or discharge lines, insuring an uninterrupted gas supply for engine fuel if one of the high pressure gas lines is temporarily out of service.

The gas flows through two meter runs where main line pressure is reduced to ounces through three stages of pressure regulation. The pressure is reduced, first from a maximum of 450 lbs. to 175 lbs., then from 175 lbs. to 50 lbs., and finally from 50 lbs. to ounces. The gas is metered between the intermediate and low pressure regulators, an orifice meter being installed in the run equipped with straightening vanes on the upstream side. A pilot loading system is used as intermediate pressure regulation on the normally used run, maintaining uniform accuracy and an extremely high degree of sensitivity.

Each run is enclosed in a steam jacket on the upstream side of the high pressure regulator to warm the inlet gas during winter operation.

The low pressure fuel gas flows through a 12-in. line to headers in the main building and through a 6-in. line to headers in the auxiliary building.

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Tennessee Gas Line Hearing Soon to Be Resumed

The Federal Power Commission has entered an order directing that the public hearing, adjourned last September 27, on the application of the Tennessee Gas & Transmission Co. for a certificate of public convenience and necessity for construction and operation of a natural gas pipe line from north Louisiana to serve areas in Tennessee and North Carolina be resumed on April 8.

Curtis B. Dall, president of the company, which proposes to construct and operate the pipe line which will cost about $20,000,000, has notified the commission, in accordance with the agreement made when the hearing was adjourned, that the company now is prepared to prosecute its application by the offering of further testimony and exhibits.

FIG. 2. Pipe line bridge across ravine at Cement, Okla., carrying 12-in. pipe of Oklahoma Natural Gas Co. across narrow ravine.

A Pipe Line Suspension Bridge

WHEN the Oklahoma Natural Gas Co., Tulsa, Okla., laid its pipe line from the gas field west of Cement, Okla., several sharp-banked ravines and creeks traversed the right-of-way which were too narrow for ditching beneath the channel. In order to cross these breaks, the pipe line department worked out a type of suspension bridge to carry the line across.

On each side of the stream a pier was set, which was made of 8-in. pipe for the vertical sections, tied together at the top with a short section of 6-in., welded together to form a substantial member. The lower ends of the pier were imbedded in a concrete grout, poured in the holes so that side sway would be eliminated. Near the top of the side, or vertical, sections, holes were burned with an acetylene torch, through which short nipples of 1½-in. pipe were passed. These nipples were bent in a wide arc and tacked to the pipe members to prevent rolling. This assembly is shown in Fig. 1.

Lower into the ground, and beneath the line where the 12-in. pipe line was designed to lay, an 8-in. pipe was placed, running from one back of the ravine to the other, which was to be used as the member to support the pipe line itself. Two pairs of bolted coupling flanges were slipped over this supporting pipe before the ends were imbedded in the bank on each side, through which ⅞-in. cable was run, and which passed through the bent nipples in the top of each vertical member of the suspension pier. The ends of each cable were formed in a loop, secured with a wire line clamp, and attached to the hooked end of a 1-in. turnbuckle. The ring end of the turnbuckles was attached to a similar loop in a short section of wire line attached to an anchor, buried in the ground and secured with concrete, so that the line from the anchor to the ferrule, or bent 1½-in. pipe in the top of the vertical section of the pier would lay at an angle of approximately 45° from the horizontal when a stretch was taken on the suspension lines by running up the turnbuckles to the desired tension to support the pipe line without sagging.

Between the 8-in. supporting line and the pipe line, two spacers were set which were fitted with saddles on each end, cut from pipe so that they would fit snugly to the outer walls of the supporting and gas carrying lines. The coupling flanges were set at approximately one-third the distance from

FIG. 1. Bridge towers for cable support of pipe line, showing hole through top of post with nipple to protect wire line, and turnbuckle for maintaining tension.

either bank, to distribute the weight of the pipe line, and the spacers located between the stream bank and the spacers, but nearer the flanges through which the supporting cables passed.

The point of contact between the surface of the ground and the vertical piers was, perhaps, five feet higher than the exposed parts of the 12-in. pipe line, and ½-in. cables were laid from one pier to the other, a cable on each side of the pipe line. Where these smaller wire lines contacted the suspension cables, they were tied to each other with wire line clamps. This arrangement was made so that emergency crossing might be provided for the line walker at times when the otherwise dry ravine would be a raging torrent after a heavy rain. The side cables make a convenient hand rail for the person walking across the pipe line, to prevent slipping when he is compelled to travel in this manner. However, the cables should be inspected carefully so that wickers will not show which could tear one's hand and cause painful wounds. Normal crossing of the ravine is done by passing down to the channel at a natural roadway a short distance upstream from the pipe line suspension bridge. A general view of the complete suspension bridge is seen in Fig. 2.

The cost of such a suspension bridge to carry a pipe line across steeply banked ravines would vary widely, depending upon conditions encountered. By using pipe for the suspension section, and wire line salvaged from idle equipment which might not be satisfactory for normal usage in development and pipe line work, the actual cost should resolve itself in charges for labor only, with the material cost merely nominal.

Camp Claiborne Chooses Natural Gas

EIGHTEEN miles south of Alexandria, La., a city has been built where soon 30,000 men will be trained in the age-old science of warfare. Three months have passed since ground was first broken at Camp Claiborne and the strip of cut-over timberlands, two and one-half by one and one-half miles, has been transformed into a modern metropolis, complete with paved streets, hospital, administration buildings, warehouses, school buildings, a theater, sewage disposal plant, water mains, electric distribution system — and dependable natural gas service.

United Gas Pipe Line Co. was chosen to serve this camp with natural gas— a large order—with estimates as to peak hour demands running from 12 to 14 million cu. ft. per day. There is a gas stove in each of the more than 6000 tents which will house private soldiers and the 736 tents constructed for the officers, as well as gas heating equipment in the 675 buildings of all types.

To bring natural gas to the camp the army constructed a 15-mile 6-in. tap line which takes off from the 6-in. Iowa-Marksville line at a point approximately 5 miles southwest of Meridian, La.

The gas is measured, regulated and odorized at a meter station just inside the camp limits. A city of approximately 30,000 could be serviced with the 332,200 ft. of gas mains and services which have been laid inside Camp Claiborne. The lines have been put down in regular city style several feet below the surface of the ground.

One of the jobs which gas will be called upon to do is the cooking of food, and mains lead into 190 mess halls, a majority of which can feed 170 men at a time. There are four mess halls, however, which can seat 1000 men at each meal. In each mess hall there is a complete kitchen, storeroom, refrigerators, gas ranges—and dishwashing facilities for the unlucky privates detailed to KP duty.

The gas mains, ranging in size from 10 down to eight inches, also lead to an 1100 nominal hp. boiler plant at the west end of the camp where steam for the 1320 bed hospital lay-out is generated. The steam is supplied to the hospital buildings through an overhead piping system which runs along the top of covered walk-ways between the various units. Another boiler plant of 660 hp. provides steam to operate the camp's huge laundry at the south end of the grounds.

Captain A. H. Weil of the Constructing Quartermaster's Corps, worked with United's engineers on the gas distribution system. Capt. Weil is well known to employes of United, inasmuch as he was at one time a member of United's engineering department, located in the Jackson district.

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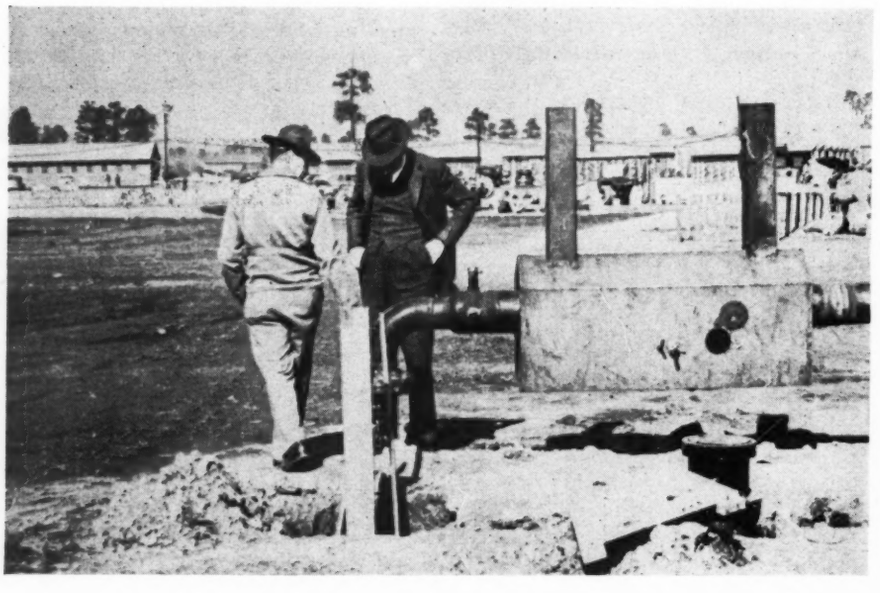

Heater at point where 6-in. tap line enters meter and regulating station. Men are Capt. A. H. Weil and I. C. Flanagan, assistant to president, United Gas Pipe Line Company.

Southern Natural Gas Co. Awards Pipe Line Contract

Southern Natural Gas Co., Birmingham, Ala., has awarded a contract to the B and M Construction Corp. for the 135-mile, 14-in. line from Logansport, De Soto Parish, La., to Monroe, La. Engineering work will be in the hands of Ford, Bacon & Davis. The line will cost $2,500,000. At Monroe it will tie in to the company's trunk line extending into southeastern states.

The line will be coated throughout its entire length, and part of the line will be wrapped. Gas for the line will come from the Rodessa gas-producing sands of the Glen Rose.

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New Texas Gas Line

An 8-in. natural gas line has been completed from the White and Baker field, Pecos County, Texas, to Bakersfield in the eastern part of the county. The line extends from the lease of the Cardinal Oil Co. to Bakersfield, where the gas is taken by an existing pipe line and transported to the Pecos Valley Power and Light Co.'s plant at Girvin and to McCamey in Upton County.

Summer Air Conditioning

2. Operating Data on Equipment Produced by Williams Oil - O - Matic Heating Corporation

By G. F. ZELLHOEFER

Air Conditioning Division
Williams Oil-O-Matic Heating Corp.,
Bloomington, Illinois

THE Air-O-Matic refrigeration unit is a new type of absorption machine which has been developed specifically to meet the unique requirements of air conditioning. The refrigerant used in Air-O-Matic is methylene chloride and the solvent is dimethyl ether of tetraethylene glycol. Both substances are essentially non-toxic, non-irritant, non-corrosive, chemically inert and chemically stable, thereby insuring freedom from health and fire hazards. Any possibility of breakdown of the working fluids and of internal corrosion of apparatus is also avoided.

An outstanding advantage of the Air-O-Matic apparatus is its inherently low working pressure. The low-side pressure in the machine will ordinarily be within the range of 21 to 24 in. mercury vacuum, and the operating high-side pressure within a range of 1 to 3 lbs. gage. When the machine is idle the high-side and low-side pressures equalize at 15 to 20 in. vacuum, depending on the room temperature. The low pressures prevailing in the absorption unit make exceedingly remote the possibility of losing a refrigerant charge either when the unit is in operation or when idle. These low pressures also afford the advantages of very simple design and construction of the absorption unit, insuring trouble-free operation without supervision by skilled mechanics.

Definition of Sub-Assemblies: The absorption unit has six sub-assemblies, which are defined as follows:

1. *Absorber* in which the refrigerant vapor from the water chiller is absorbed by the weak solution.

2. *Heat Exchanger* for effecting the transfer of heat between the hot, weak solution flowing from the heater to the absorber and the cool, strong solution flowing from the absorber to the heater.

3. *Solution pump and motor assembly* to effect circulation of the strong solution from the absorber through the heat exchanger to the heater.

4. *Heater* in which the refrigerant is distilled from the strong solution.

5. *Condenser* in which the refrigerant vapor from the heater is condensed to a liquid.

6. *Water chiller* in which liquid refrigerant is vaporized to chill the water circulated through this unit.

Cycle of operation: The cycle of operation of Air-O-Matic is shown in Fig. 1.

When the solution-pump is placed in operation, the strong solution from the absorber is pumped through the outer passages of the heat exchanger to the heater. In the heater, the solution absorbs heat from the steam causing the distillation of the major portion of the refrigerant from the solvent. The refrigerant vapor which is released in the heater, flows to the condenser where it is cooled and condensed to a liquid by cooling water circulated through the condenser coil. The liquid refrigerant flows from the condenser through the dehydrator and solvent-return to the water chiller where a float valve meters it into the unit as required. The heat absorbed from the current of water passing through the coils of the water chiller causes the liquid refrigerant to vaporize under the low pressures maintained in this unit, and the refrigerant vapor then flows to the absorber.

While the refrigerant is following its cycle from the heater to the absorber, the weak solution in the heater flows through the inner passages of the heat exchanger to the absorber. This solution is discharged through the absorber nozzles under a pressure differential of 3 to 4 lbs., forming a fine spray which impinges upon the absorber coil and then flows downward over the fins of the coil in a thin film, absorbing the refrigerant vapor that enters the absorber from the water chiller. The strong solution, formed by absorption of the refrigerant vapor, flows by gravity to the suction of the solution pump and is returned through outer passages of the heat exchanger.

The cooling water circulated through the absorber coil dissipates the heat generated by the absorption of the gaseous refrigerant.

This cycle of refrigerant and the solution continues as long as the solution-pump remains in operation, thereby continuously absorbing heat from the current of water in the water chiller and continuously liberating heat in the absorber and condenser unit.

When the solution-pump is stopped, the solution from the heater flows into the absorber and an equilibrium is established between the pressure in the high side of the system and the low side. When the pump is again started, the discharge of this volume of highly concentrated solution into the heater ordinarily generates the necessary head pressures to effect the circulation of

G. F. ZELLHOEFER

THIS ARTICLE by Mr. Zellhoefer is the second in a series of six on gas-fired, summer air conditioning, its equipment and potential market. The first article in this series was published in the February issue of GAS, and was authored by H. W. Heisterkamp, manager, air conditioning sales, The Bryant Heater Co., of Cleveland, Ohio.

Mr. Zellhoefer graduated from the chemistry school of the University of Illinois in 1922. In 1926 he became associated with the Williams Oil-O-Matic Heating Corp., and did research in combustion and combustion engineering. From 1930 to the present time he has worked in cooperation with the Williams Oil-O-Matic Heating Corp. and the University of Illinois on a program of research dealing with the solubility characteristics of organic solvents. From this work there has been developed the solvent-refrigerant combination now utilized in the Williams Air-O-Matic absorption unit. — Editor.

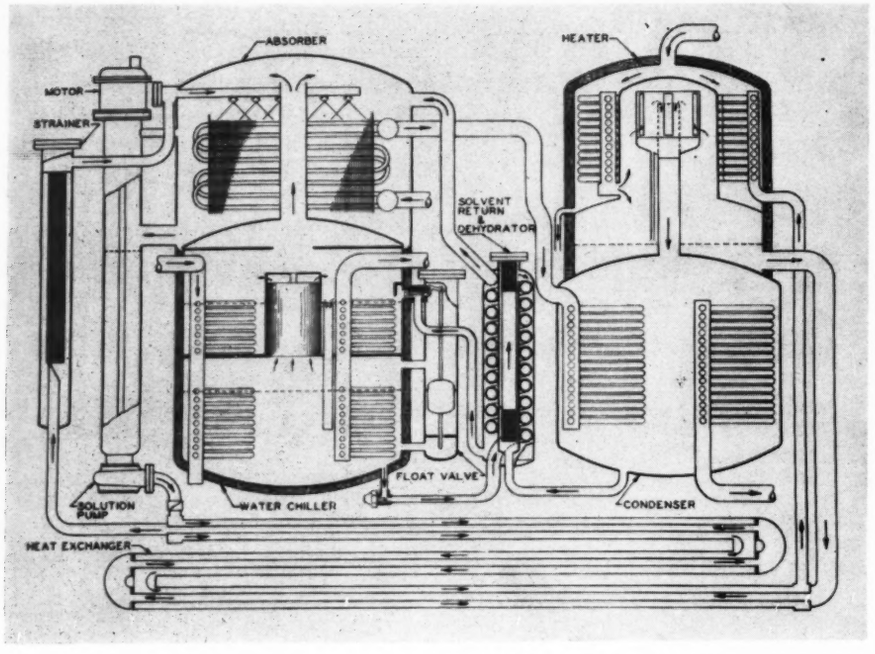

FIG. 1. Cycle of operation of Air-O-Matic unit.

the weak solution from the heater to absorber, but to insure the immediate generation and maintenance of normal head pressure, there is provided a pressure control valve in the water line to the condenser which by-passes the flow of cooling water around the condenser until there is attained normal refrigerant vapor pressure in this unit.

With the maximum head of solution on the inlet of the solution-pump, this pump is designed to discharge the solution from the absorber at a rate equal to the maximum flow under any normal operating condition. Under those operating conditions in which the flow of solution is reduced, the capacity of the pump is automatically reduced by the reduction in the solution head on the suction inlet.

Cycle of refrigerant through water chiller: A float valve which is actuated by the refrigerant level in the lower section of the water chiller, controls the flow of liquid refrigerant to the chiller. The liquid refrigerant, together with the flash vapors which are generated in passing through the valve, are discharged against a cylindrical baffle located near the top of the chiller. The flash vapors escape through the top of this baffle while the liquid refrigerant gravitates downward into the upper section of the chiller. A portion of the refrigerant is vaporized in the upper section while the balance overflows and is vaporized in the bottom section. The vapors which are generated by the vaporization of the liquid refrigerant flows to the top of the assembly and thence to the absorber.

The refrigerant entering the water chiller contains approximately 0.15% solvent. By bleeding refrigerant solution from the bottom of the water chiller at a rate of one-fortieth to one-fiftieth as fast as refrigerant solution enters the water chiller, a concentration of approximately 6% solvent and 94% refrigerant is maintained in the bottom section of the chiller.

Solvent-return: Refrigerant solution is bled through an orifice from the bottom of the water chiller and flows to the spiral coil within the solvent-return assembly. Hot liquid refrigerant flowing downward over this coil effects a violent boiling action within the coil. The liberated vapors and entrained refrigerant-solvent solution are discharged from this coil into the absorber. The solution entering the absorber is approximately 60% solvent.

Construction features: Principal features of each of the sub-assemblies comprising the absorption unit are described below:

1. *Absorber.* The absorber consists of a shell, cooling coil, and a bank of nozzles.

The nozzle bank if located above the cooling coil and the nozzles are so designed that the sprayed weak solution is directed over the cooling coil to insure equal distribution. There is provided a strainer between the heat exchanger and the absorber nozzle bank.

2. *Solution-pump.* The solution motor pump assembly consists of a centrifugal pump, motor, extended shaft with flexible drive connection, and housing.

All motors have special impregnated windings for service in a closed atmosphere of refrigerant vapors. The motor for both the 7½-ton and 15-ton unit is ½ hp. and for the 32-ton unit is ¾ hp.

3. *Heat exchanger assembly.* The heat transfer surface of the heat exchanger is made of nine sub-assemblies consisting of corrugated, copper plated, steel sheets, approximately 2.5 in. wide and .018 in. thick. Each of these sub-assemblies fit tightly in a steel casing and they are manifolded to form a serpentine assembly. Weak solution is circulated through the inner passages of the assembly and the strong solution is circulated through the outer passages.

The entire assembly is insulated and housed in a sheet metal case. (In Fig. 2, this housing and insulation is removed to show construction.)

4. *Heater.* The heater consists of a steam jacket, vapor release chamber, an eliminator, and a series of solution coils. Each of these coils is made of copper tubing ¾-in. in diameter and 15 ft. long. One end of the coil is connected to the inlet manifold and the other end to the outlet manifold. The outlet manifold discharges the refrigerant vapors and solvent into the vapor release chamber, and at the outlet of this chamber is an eliminator to separate the entrained solvent from the refrigerant vapors.

5. *Condenser.* The condenser is conventional shell and coil construction.

6. *Water chiller.* The water chiller consists of two series of water coils. One end of each coil is connected to an inlet manifold and the other end is connected to an outlet manifold. Each series of coils are submerged in a bath of liquid refrigerant.

The flow of refrigerant to the water chiller is controlled by a float valve actuated by the refrigerant level in the bottom section.

7. *Solvent-return and dehydrator.* This sub-assembly consists of a cylindrical housing in which there is a spiral copper coil and dehydrator tube. The refrigerant solution bled from the bottom of the water chiller percolates upward through the spiral coil to the absorber while hot liquid refrigerant from the condenser flows downward over the coil to effect the percolator action within the coil.

The dehydrator is located in the center of the assembly and consists of a cylindrical tube charged with aluminum oxide. There is an inlet for the refrigerant at the bottom of this tube and an outlet at the top.

Characteristics of performance: The nominal capacity ratings for Air-O-Matic absorption machines are based upon a cooling water temperature of 90° F. at absorber inlet and 103° F.

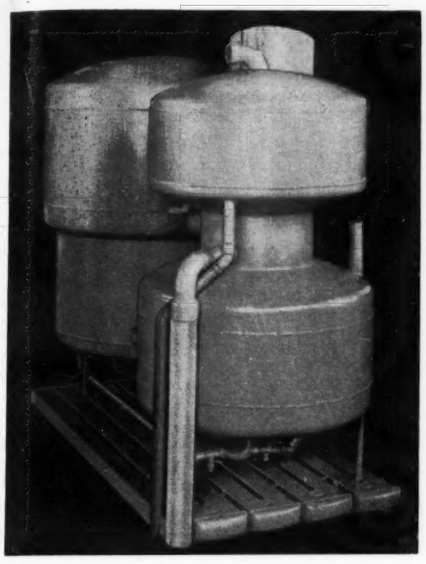

FIG. 2. Air-O-Matic 15-ton model.

at the condenser outlet; chilled water temperature of 53° F. at the water chiller inlet and 46° F. at the chiller outlet; and saturated steam temperature of 240° F. (11 lbs. pressure).

The mean temperature for the cooling water under these conditions is 96.5° F. and the mean temperature for the chilled water is 49.5° F. A decrease in the mean temperature of the cooling water increases the capacity of the machine approximately 3.5% per degree within the limits of 4 degrees and an increase in the mean temperature of the chilled water increases the capacity of the machine approximately 3.5% per degree within the limits of 3 degrees.

Under the operating conditions indicated for nominal rating of the absorption machine, the heat input is 365 B.t.u. per minute per ton and the heat liberated is 565 B.t.u. per minute per ton. Within the range of normal operating conditions, the heat input is 330 to 380 B.t.u. per minute per ton and the heat liberated 530 to 580 B.t.u. per minute per ton.

Air-O-Matic models: There are now available Air-O-Matic absorption units with nominal capacity rating of 7.5, 15, and 32 tons.

The two smaller sizes are "package" type units which are charged at the factory with solvent and refrigerant, and are hermetically sealed. The dimension of the 7.5-ton unit is 2.5 ft. wide, 5 ft. long, and 4 ft. high. Dimensions of the 15-ton unit is 2.5 ft. wide, 5 ft. long, and 5 ft. high. (Fig. 2.)

The 32-ton unit is the "open" type in which the inter-connecting lines between the absorber, heater, condenser, and water chiller are assembled on the job. This unit is 5 ft. wide, 11 ft. long, and 7 ft. high. (Fig. 3.)

Auxiliary equipment: Following is a description of auxiliary equipment to be used with Air-O-Matic models:

1. *Air distribution unit.* An air distribution unit ordinarily consists of a blower-motor assembly, heating coils, humidifier, a set of filters, and cooling coils. For use with Air-O-Matic, the cooling coils are necessarily designed for use with chilled water. These chilled water coils, as well as all the other parts of the air distribution unit, are of conventional design and construction.

2. *Controls.* The control system used with Air-O-Matic for regulation of the temperature and humidity throughout the air conditioned space may be the same as that ordinarily specified for use with compression type of refrigeration equipment of comparable capacity.

The limit controls necessary for the Air-O-Matic absorption unit are furnished as part of this machine and consist of: (a) A low limit steam control to open the circuit to the motor of the motor-pump unit should the steam pressure be less than that necessary for efficient operation of the machine. (b) High pressure safety cut-out to open the circuit to the motor of the motor-pump unit should the condenser pressure exceed 5 lbs. (c) Low temperature safety cut-out to open the circuit to the motor of the motor-pump unit should the refrigerant temperature in the water chiller drop below 34° F. (d) Safety cut-out to open the circuit to the motor of the motor-pump unit in case of excessive current. (e) Manual cut-off switch to open the circuit to the motor of the motor-pump unit.

3. *Heat disposal equipment.* There may be used a conventional type of atmospheric water tower, forced air water tower, spray pond, or tap water for purposes of dissipating the heat liberated by the absorption machine. Where water cooling equipment is used, the inlet water temperature to the absorption machine is ordinarily 86° to 90° F. and the outlet water temperature 100° to 105° F. Where tap water is used, the flow is adjusted to afford an outlet water temperature of 103° to 107° F.

The heat to be dissipated from the absorption machine is 530 to 580 B.t.u. per minute per ton, depending on the operating conditions.

4. *Steam boiler.* The normal average steam input to the absorption machine is 23.5 lbs. (22,325 B.t.u.) per hour per ton, requiring a heat input to the boiler of 27,900 B.t.u. per hour per ton, based on 80% boiler efficiency. The boiler should be rated for 10%

FIG. 3. Williams Air-O-Matic 32-ton unit.

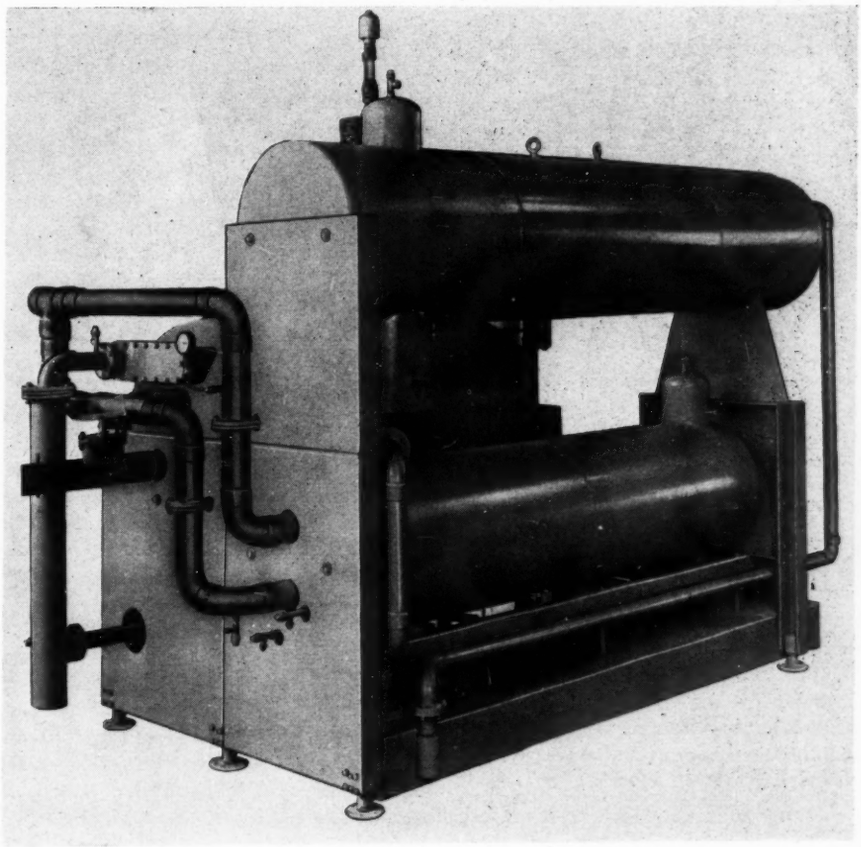

TABLE No. 1. COMPARISON OF OPERATING COSTS

	Williams Absorption	*Compression Refrigeration*
Power for atmospheric water tower (70 ft. head)	7.5c	6.0c
Power for circulating chilled water	2.3c	2.3c
Power for circulation of air (13,000 C.F.M.—1" head)	7.0c	7.0c
Power for refrigeration unit	1.5c	52.5c
Gas	46.5c	.....
Make up water for water tower	6.0c	4.0c
Total	70.8c	71.8c

more than the normal load requirements, to take care of the pick-up load. For example, in case of a 15-ton designed load, the boiler output rating should be 368,350 B.t.u. per hour, and the input rating 460,350 B.t.u. per hour.

Chilled water circulating pump: On the average installation the pressure drop of the chilled water through the inter-connecting lines does not exceed 5 lbs., while the pressure drop through the water chiller and chilled water coil does not exceed 10 lbs., or a total of 15 lbs. (35 ft. head). If the temperature range for the chilled water is 7.5°, the volume of water handled is 3.2 gals. per minute, per ton. On this basis, the power required for chilled water circulation is 1/3 hp. for 7.5 tons, ¾ hp. for 15 tons, and 1.5 hp. for 30 tons.

Operating cost: Table No. 1 gives the operating cost per hour of a representative 35-ton installation using the Williams Absorption Machine and a comparable installation using compression equipment. The data in this table is based on the following rates: Power, 1.5c K.W.H.; Gas, 5c therm; and Water, 15c per 100 cu. ft.:

In determining the relative costs of operation between the Williams Absorption Unit and compression refrigeration units, consideration must be taken also of such items as demand charges for power, cost for providing adequate power facilities, cost for purchase and installation of equipment, and supervision and maintenance costs. These items are subject to such wide variations, depending on local conditions, that they are not included in the table. It should be noted that the installation of the "package" type absorption machine involves a minimum of labor and that ordinarily additional power facilities are not required because of the low power demand. Low maintenance is also insured because of the mechanical simplicity of the unit and the low operating pressures within the unit.

History of Air-O-Matic. Research was started in 1930 to develop a satisfactory solvent-refrigerant combination for an absorption unit applicable to domestic and commercial air conditioning.

In the course of this work, several solvent-refrigerant combinations were developed and tested. In 1935 the new chemical, dimethyl ether of tetraethylene glycol, was first synthesized, and in 1937 this chemical was put in production. In 1938 the first field tests were made with Air-O-Matic units utilizing this new chemical as solvent and methylene chloride as refrigerant. These machines have proven that this solvent-refrigerant combination is entirely satisfactory in every respect.

Since 1938 a number of innovations have been made in the design of the absorption machine to afford a more compact, efficient, and service-free device.

There are now 103 Air-O-Matic units installed which have a total refrigerating capacity of 2305 tons.

Central Heating Appliance Research

A New program of research on central heating gas appliances was recently started at the American Gas Association's Testing Laboratories in Cleveland, under the supervision of the Association's Committee on Domestic Gas Research headed by F. J. Rutledge. To assist this group, a Technical Advisory Committee of Manufacturers on Central Gas Space Heating Research, of which J. W. Farren is chairman, has been appointed by the Association of Gas Appliance and Equipment Manufacturers.

Other research projects under the supervision of the Domestic Gas Research Committee already under way at the Laboratories include fundamental research on domestic gas ranges, atmospheric gas burners, and domestic gas water heaters.

The purpose of this new program is to establish facts on domestic utilization of gas in central heating appliances, and to study further the effect of appliance and burner design on safe and efficient consumption of city gas.

Some of the general subjects to be included in this study are a determination of the fundamentals of aeration of burners and flames and venting of flue gases through heating elements and flues, efficiencies under service conditions, heating time rates, heat transfer problems as they relate directly to central heating equipment, effectiveness of joints used in heating elements, and the elimination in so far as possible of furnace noise.

Because of the perplexing problems which have arisen in connection with this latter item and scarcity of technical facts on the subject, it has been decided to undertake this study first. Particular attention will be given to an investigation of the phenomena of singing flames and musical sounds produced by pipe organs, as information on these subjects indicates that they constitute the closest approach to noises generated in gas furnaces. The Laboratories some years ago completed a comprehensive study of the elimination of noise in industrial furnaces which was set forth in two bulletins. Reports Nos. 692 and 724.

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Alabama Munitions Plant To Have Natural Gas

The Alabama Gas Co., Montgomery, Ala., has announced the letting of a contract to the B & M Construction Co. of Oklahoma City, Okla., in the amount of approximately $40,000, for the building of the six-inch pipe line to carry natural gas to the $23,500,000 shell forging plant being erected in East Gadsden, Ala., by the war department as a part of the national defense program. Men and material are now being assembled for the work, it is stated, and actual construction is to begin as soon as possible. It is announced that the line will be electrically welded together to form one continuous pipe.

The shell plant will use a large amount of natural gas, it is said, for heating steel billets immediately before they are fed into the giant forging machines.

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A.G.A.E.M. Annual Exhibit Found Inadvisable

The board of directors of the Association of Gas Appliance and Equipment Manufacturers at their meeting on March 18, having given every due consideration to present conditions and to the trends as they may affect general business, resolved that it is inadvisable to hold an exhibition of gas appliances and equipment this year in conjunction with the American Gas Association Convention. The American Gas Association concurred in this decision at their executive board meeting on March 19.

New Wrinkles in Gas Heating

By O. A. KINZER

Utilization Engineer, The Dallas Gas Co., Dallas, Texas

NEW wrinkles in the application of house heating is a broad and indeterminate term. What may be a new idea to one person may be an old accepted practice to another. New ideas, sometimes startling, are usually only a different combination or application of old, well-known, physical laws.

House heating in the southern states, due to a better application of the laws of heat transfer and the more efficient heating equipment now available, is changing rapidly. The changes in the past 10 years are marked. We have seen the central heating plant conversion burner replaced by gas designed furnaces and boilers. We have seen gravity hot water radiator boiler systems operating at atmospheric pressures with a 150 B.t.u. per sq. ft. emission rate changed to forced flow hot water systems operating under 30 lbs. pressure and with 200 B.t.u. per sq. ft. emission rates. We have seen the heating plant moved out of the basement to a hall closet, to a corner in the kitchen, to the service porch, or to the attic. Best of all, we have seen the unvented radiant space heater being gradually replaced with floor furnaces and other vented gas-burning equipment; doing away with wall and window sweating, and pointing the way toward complete heating of the entire house, using automatic temperature controls and winter air-conditioning equipment.

Many other changes have taken place. Homes are constructed better, insulation is being used to conserve heat, and people are learning that good heating, evenly applied throughout the home, is not only needed to maintain the health of their families but is also one of the cheapest services they buy.

The flexibility of gas-burning equipment has permitted its use in many situations. Overhead unit heaters are being used in furniture factory paint drying rooms. Outside air is passed through the unit heater and into the drying room. The ease of temperature control along with low relative humidity of the heated air are ideal for this purpose. Rug drying in rug laundries represents a similar application. Bowling alleys are natural spots for unit heaters, as they make possible different temperature zones for players and spectators. Unit heaters are used in the Dallas Zoo to maintain summer conditions in the elephant house and the monkey cages. They are also being used in airplane factories and hangars.

In the baby ward of a local hospital a vertical forced warm air furnace was installed to augment the central steam heating plant and provide higher temperatures and heat during the night setback of the central plant.

A small forced warm air furnace supplies heat to the entrance vestibule of the Dallas Gas Co. building with a thermostatic setting of 85° in the vestibule to prevent cold winds from chilling the main lobby.

The bedroom of a small home was equipped with a vented gasteam radiator, automatic gas valve, safety pilot, and thermostat. This room was used as an incubator for a premature baby, and the thermostat was located at mattress height close to the baby's bed. Temperatures were maintained at 85° for the first week and dropped a few degrees each week, under the doctor's direction, until the baby had developed to a point where normal room temperatures could be maintained. A recording chart meter was installed, and the record showed temperatures were maintained to within one degree of the thermostat setting.

A large two-story mausoleum constructed of reinforced concrete is being heated, using butane gas, by two forced warm air central plants. The units are located in each end of the building in heater rooms separated from the main building. A constant temperature of 68° is maintained 24 hours a day, as the heat storage capacity of the concrete used in the structure is too great to permit intermittent heating.

Coal and wood stoves have been the standard for years in army tents. The army camps in Texas are now being piped for gas, and the tents, eight men to a tent, are being heated with a 20,000 B.t.u. gas-burning circulator in each tent. Cast iron radiators are being used in rooms where explosive vapors are present and are heated by isolated forced circulation hot water boilers.

Large rambling houses and apartment houses are a natural field for the application of forced hot water systems. The forced circulation plus small water capacity in the boiler provides quick heating with no over-run heating and small piping and standby losses. Forced hot water is particularly applicable where the installation of warm air and return air ducts and registers would mean the cutting of walls. It is also ideal for the older homes having high ceilings, loose construction, no weather stripping, and drafty floors.

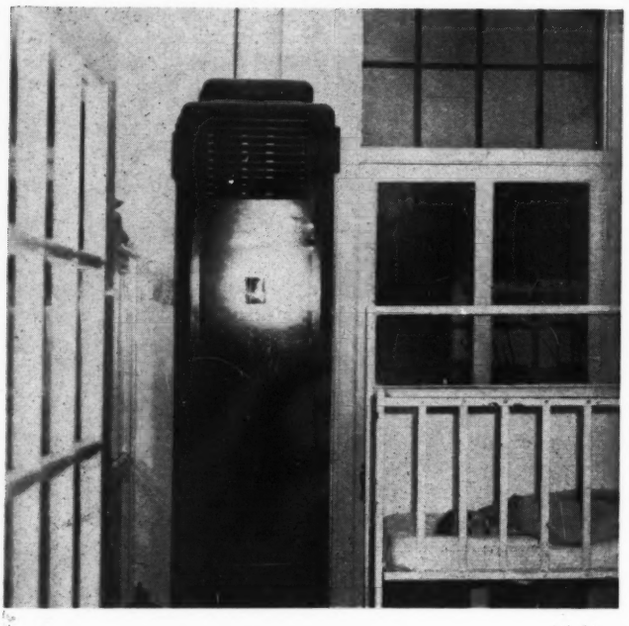
O. A. KINZER

Houston and Oklahoma City report excellent progress in the use of the attic type central furnace with warm air registers in the ceiling and selling at package prices installed from $349 to $399 on terms of nothing down and as low as $11 per month.

The old saying that the southern winters are short and that not much heating is needed is losing ground. An examination of the Degree Day Record of Dallas, Tex., shows 157 days in which heating is needed. That equals 43% of the total days in the year. It is a good selling point.

To retain the progress we have gained and to move closer to the day when every home will be heated by a central plant with full automatic temperature control, it is necessary that the equipment we sell be correctly sold, engineered, and installed. I shall attempt to cover briefly practices that we have found to be sound.

We find it best to thoroughly train our salesmen to calculate heat losses and to be able to make an application of the type of heating best suited to the



The vertical forced warm air furnace shown was installed in the baby ward of a Dallas hospital and is used to augment the central steam heating plant.

particular requirements. He becomes a better salesman if he sells a heating service and not heating equipment. After making a sale it is necessary that his calculations and layout be checked by an engineer, who not only checks the mathematics of the layout but also talks to the purchaser to find out what is expected of the equipment and what the salesman promised it would do. The shop installation foreman also checks the home to see if it is physically possible to make the installation.

Standards for installation must be set up and maintained. Every chance for failure of the equipment to operate correctly and satisfactorily must be eliminated. For example, in the installation of floor furnaces, 24 in. minimum must be available from the floor to the ground, and plot drainage must be good. Horizontal vent pipes cannot be over 20 ft. in length and must be corrosion-proof double wall pipe. Floor furnace pans must be securely braced to the floor joists to prevent floating in case water rises around them.

Such standards as these must be maintained if additional sales are to be made and public acceptance of the type of appliance retained.

It must be recognized that there is a danger in the sale of central heating systems in the South in the fact that so few dealers understand the engineering of application and installation of such systems. It is a new field, new equipment, and there are coming into the heating contracting business many dealers who are perfectly honest and sincere but who just do not know what it takes to do a good job. This can become a serious situation and the results of a few unsatisfactory installations can spoil many future sales. If the Gas Utility wants residential central heating, the Utility should publish and make available the standards of installation that will insure satisfactory performance. A cooperative plan of education and assistance to the dealer is required.

The Peoples Gas Light and Coke Co. of Chicago has gone to considerable length and expense in setting up standards for their Certified Quality Heating Program. The San Antonio Public Service Co. has adopted a somewhat modified plan. There is a definite need for standards adapted to the southern states, covering the selection of heating equipment, calculations for heating requirements and installation practices. These standards should cover central heating plants as well as floor furnaces, vented circulators, and vented gasteam radiators. Collaboration among members of the Southern Gas Association should further the development of these standards.

Along with a consideration of equipment, installation and the establishment of proper standards, there is the danger of becoming too equipment-minded. Let us not forget in our application of heating equipment just what we are trying to do.

The medical profession tells us in *Consumers Digest*, January 1940 issue, that one of the best ways to prevent a common cold from starting is to accustom oneself to inside temperatures during the winter months of 70° and to dress warmly when going outdoors. They do not tell us how to be comfortable at a 70° inside temperature, and the average opinion is that 70° is chilly. The way in which we usually heat our homes produces a chilly 70° because we heat intermittently and seldom ever get the walls, floors, or ceilings of the house warm. We heat only the air inside the house. An air temperature of 75° is required when the wall temperature is 60° and an air temperature of 80° when the wall temperature is 40°, to be equally comfortable. This is true because the human body at 98.4° radiates about one-half of its normal heat emission by radiation to the surrounding walls and material objects that are at a lower temperature. If the heat loss from the body is increased by radiation to cold walls, then the air temperature surrounding the body must be increased to obtain comfort.

Actual experiences have proved that maintaining constant temperatures in the entire home of 70°-72° and keeping the walls warm will not only produce a feeling of greater comfort but will increase the gas bills little, if any. The effect of radiation from the body to a cold surface can be detected by stepping close to a cold window pane where a chilling effect will be noticed even though the air temperature remains constant.

A failure to understand the need to operate floor furnaces and central plants continuously in order to maintain warm walls, floors, and ceilings and the lack of selling the correct method of operation to the purchaser has resulted in many complaints of cold drafty floors, slow heat pick-up and general unsatisfactory results.

Let us remember in selling and applying heating equipment that we are selling only one commodity—comfort—and that the users' comfort must be our measuring stick of success or failure.

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South Carolina Utilities Co. Asks Sale Approval

South Carolina Utilities Co., Conway, S. C., has applied to the Federal Power Commission for approval of the sale of all of its operating properties to the South Carolina Public Service Authority.

The applicant, subsidiary of Walnut Electric & Gas Corp., has operating facilities in the towns of Myrtle Beach, Loris and Conway, S. C., and in surrounding territory in Horry and Georgetown counties. The purchase price, according to copy of agreement filed with the commission, is $835,000 plus certain amounts relating to additions, material and supplies and unbilled revenues as of the closing date, which the agreement states shall not be later than March 1, 1941.

The facilities to be sold are all of the company's operating properties and include a steam electric generating plant at Conway, a Diesel electric generating plant at Myrtle Beach, substations, transmission lines and rural lines.

Fuel Rating Mechanics Needed by Government

LABORATORY mechanics experienced in fuel rating are needed by the Federal Government. An examination to fill these positions has been announced by the United States Civil Service Commission. The positions pay from $1620 to $2000 a year, less the usual retirement deduction.

Responsible experience in the operation, testing, or maintenance of internal-combustion engines including experience in rating fuels with a CFR engine is required. Persons appointed as laboratory mechanics in fuel rating will make routine and referee ratings of motor, aviation, and Diesel fuels using the ASTM-CFR engine, the CFR aviation engine, or the CFR Diesel engine. They will record and tabulate the test data based on their findings. The duties of these positions also include the inspection and overhaul of test engines, and the installation of test equipment. Applications must be filed at the Commission's Washington office not later than April 17, 1941. Further information and application forms may be obtained at any first or second-class post office, or from the Civil Service Commission, Washington, D. C.

■ ■

Commission Cancels Hearing Of Memphis Natural Gas Co.

The Federal Power Commission entered an order terminating the show-cause proceeding relating to the failure of Memphis Natural Gas Co. to file a required financial and statistical report and cancelled the public hearing previously set to begin at Washington on March 12, 1941.

Subsequent to the Commission's order of February 12, setting the matter for hearing, the company filed a financial and Statistical Report for the year ended December 31, 1939, with the explanation that its delinquency in filing was due to an oversight and that it had always considered itself to be a natural gas company within the meaning of the Natural Gas Act. The Commission accepted the company's explanation.

■ ■

Motion to Cut Gas Rate Denied by Commission

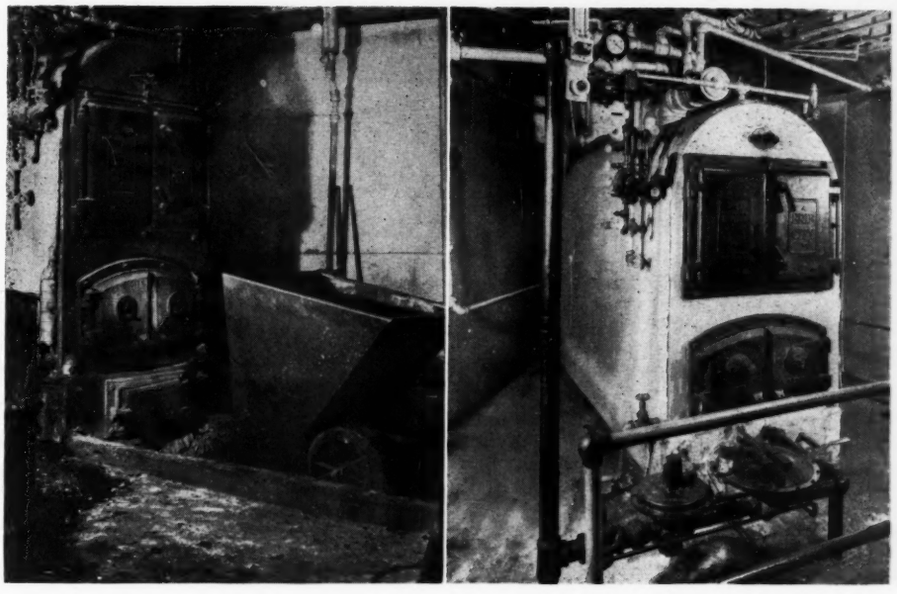
It was announced in Washington recently that the federal power commission had denied a motion by Akron and Cleveland city officials for an immediate order reducing rates for natural gas sold at wholesale by the Hope Natural Gas Co., Clarksburg, W. Va., to the East Ohio Gas Co., of Cleveland, Ohio.

Akron and Cleveland had asked for an immediate order reducing the rates approximately $662,000 a year, but the commission said that there was insufficient evidence of record "at this time" to support the motion, which was dismissed without prejudice.

■ ■

San Francisco Living Costs Higher; Gas Costs Lower

According to figures of the Bureau of Statistics of the U. S. Department of Labor, living costs have increased 36.4% in San Francisco since 1914, while records of the Pacific Gas and Electric Co. show that the price of gas has decreased 48.2% in the same period. Figured on usage at the time they were made, the gas cuts now aggregate $8,633,000, a year. In the last five years there have been four major reductions in gas rates.



With the installation of the gas conversion burner equipment in the boiler (right), the Cudaphy Packing Co. is now using gas (in lieu of coal, left) exclusively for heating purposes throughout its McKeesport plant.

Gas Replaces Coal . . . in a Hurry!

WHEN a customer orders new equipment, and wants it in a hurry, the Equitable Gas Co., Pittsburgh, Pa., can deliver the goods in 1941 style, according to a report in a recent issue of the Philadelphia company's magazine, *Public Service*. This was demonstrated when Cudahy Packing Co. O.K.'d the recommendation of R. E. Blackwell, Industrial Sales Department, for the installation of a new Weco Gas Conversion Burner in the boiler at their McKeesport plant.

Four days' service was requested to avoid shutting down the plant, and the Industrial Gas Sales, Appliance Service, Distribution Departments, and Surface Combustion Co. all cooperated — and *delivered the job on time!*

WEDNESDAY, 2:30 P. M.:

The order was 'phoned in to Surface Combustion Co. to ship an F600-L54 Weco Burner from the Tulsa, Okla., plant of the Webster Engineering Co. to the Cudahy Packing Co., McKeesport. Special controls were involved which were not all in stock, and the gas manifold, although well under construction, had to be made up from the order. Surface Combustion said they would try their best, and wired Tulsa accordingly.

At 7:30 that evening, a return wire to their Pittsburgh office stated that the equipment would be loaded Thursday; that the express company had promised delivery in time to permit making installation on the date requested; and that a night letter was being sent giving more details.

FRIDAY:

An airmail letter was received from Tulsa stating that the equipment had been loaded at noon Thursday. A 15-minute transfer from train to train was made at St. Louis by the express company, and later Friday afternoon the Industrial Sales Department checked with Frederick G. Seelman, Eastern U. S. maintenance and equipment manager for Cudahy Packing Co. Then K. L. Anderson and his appliance service man "pulled" the old coal stoker, and prepared the boiler for installation of gas equipment.

SATURDAY:

Mr. Anderson and his men were on hand when the equipment was delivered at 8 A. M., and they went right to work. By 3:30 the same afternoon the last of the gas piping was being installed, and to the delight of Mr. Seelman and everyone else concerned, the burner was lighted at 7:30 Saturday night.

The boiler which this new burner heats supplies steam for space heating, for processing, and for water heating. This plant has been using gas for two smokehouses and for a large meatloaf oven. With the new installation, they are now using gas exclusively for heating purposes throughout the plant.

Mr. Blackwell, the salesman who is responsible for this sale, was "on the job" Saturday afternoon and Sunday afternoon. Said he:

"Every one of the four men who had a hand in completing this job on time is to be congratulated. It was a splendid example of teamwork and cooperation among the departments."

■ ■

Standard to Drill New Field

Standard Oil Co. of California, holding leases on 16,000 acres of land in the northern section of Solano County, Calif., plans to drill for natural gas or oil in that area as soon as the weather permits.

Training Manufacturer Employees

By JOHN C. MUELLER

Payne Furnace & Supply Co., Inc., Beverly Hills, Calif.*

THE program of employee training in this company was first begun due to mutual desires on the part of the management and of the employees of the retail installation and service departments for an opportunity to discuss problems encountered in the work of these departments. After the first few of these meetings had been devoted to trouble shooting, it became obvious that many of the employees lacked to some extent a fundamental background for their work. Corrections were often made empirically with only a hazy idea of why a certain readjustment produced a certain result. When the desired result was not forthcoming, or when the difficulty was not one contained in the employee's previous experience, lack of knowledge of the fundamentals involved became a great handicap.

It was also true that the average employee, like the average customer, was not particularly discriminating in his beliefs on the subject of gas and gas appliances. It had not occurred to him, for example, that in any warm air furnace it is hot metal, and not the fuel itself, which is the heating medium. Or he had never realized that there might be a fallacy in the statement that one furnace operated more economically than another because of its "more efficient" burner. Consequently he was at a disadvantage in talking to a customer; no matter how unfounded the customer's ideas may have been, the employee, in his customer contacts, lacked the information to counter them. It was evident that customer confidence, based upon contacts with employees who appeared to know what they were doing and why they were doing it, could be greatly improved.

Hence, it was decided to seek two distinct objectives in the training program:

To impart a general knowledge of gas and gas appliances.

To specialize in installation and servicing problems.

The first objective was not confined to any particular group, inasmuch as all employees, in coming into contact with the public, may act as unofficial salesmen for their product. Most employees, in whatever capacity, will also have greater interest in their work when they are given an integrated picture of the industry (in this case, gas utilization) and their part in it.

The second objective, as applied to installation and service department employees, looked toward an increase in their efficiency and a betterment in customer relations. Foremen of the factory production departments, who might benefit from a knowledge of installation and service matters, were also permitted to attend classes during this phase of the program.

When the classes were initiated, all service and installation department employees were requested to attend. The meetings were necessarily held outside of working hours, and by mutual consent, those attending regularly were paid on the basis of one hour's overtime for each two-hour class period. Later, it was decided to put this program on a voluntary basis. It then became necessary to make the classes not only informative but as interesting as possible in order to hold the attention and attendance of the class. This was done by employing visual means of instruction, especially lecture-table demonstrations and working models, to the fullest possible extent.

Before the clear separation of the two objectives of the program, the meetings were chiefly devoted to discussions of problems encountered by the class members, and means of overcoming them. From the first, the basic principles involved were stressed, although no particular attempt was made to present them in logical sequence. When a point could be made clearer by an actual demonstration (for example, elimination of burner noise by showing the effects of various adjustments on an actual burner) such a demonstration was made. The next step, as soon as a clearly defined program was worked out, was to plan lecture table demonstrations to accompany the talk itself, emphasizing the points to be brought out. These were particularly helpful in the general knowledge phase of the course. In the second phase, working models of controls, electric circuits, and appliance parts served the same purpose.

The first portion of the program is begun on familiar ground in order to give the class a picture of the scope of the course. A too-theoretical beginning, in which the class cannot see an application of the principles discussed, must be avoided. The first meeting begins with a discussion of types of heating equipment, with which all of the class members are generally acquainted. Cut-away models, borrowed from the display floor, and blackboard drawings add visual interest.

The next step is a discussion of the means by which the heat from the flame in the appliance reaches the space being heated. This brings in methods of heat transfer. Conduction is demonstrated by wax-coated copper and glass rods, one end of each held in a flame; convection currents are shown in a beaker of water over a flame, a few drops of fluorescein solution tracing the water movement; radiation by the heating of a sheet of metal held at one side of a flame where it is not subject to heating by the other two methods. These demonstrations are typical of those used throughout the course.

While still on familiar subjects, gas and air, as the source of heat are mentioned, and the fact that they are actual substances, possessing weight, is demonstrated. A soap bubble filled with air floated on butane in a large fish bowl furnishes a striking evidence that gas has weight.

From this point, an outline of the course is as follows:

Forms of matter: Elements, compounds, mixtures.

Energy and matter: Energy accompanying change in form of matter (chemical energy); Conservation of matter and energy.

Sources of energy: The sun as the ultimate source; transformations in solar energy to other forms.

Combustion: As a form of chemical energy, oxygen, fuels, combustion products.

Natural Gas: Composition, combustion.

The gas burner: Luminous flame and Bunsen burners, mechanics of the gas flame, chemistry of the gas flame.

Application of the burner to the appliance: The heating element, the vent and draft hood, effect of varying design.

Controls: Functions of various parts

*Portion of a report of the Subcommittee on Appliance Installation and Employee Training, Utilization Committee presented before the Spring Technical Conference of the Pacific Coast Gas Association, Los Angeles, Calif., March 27 and 28, 1941.

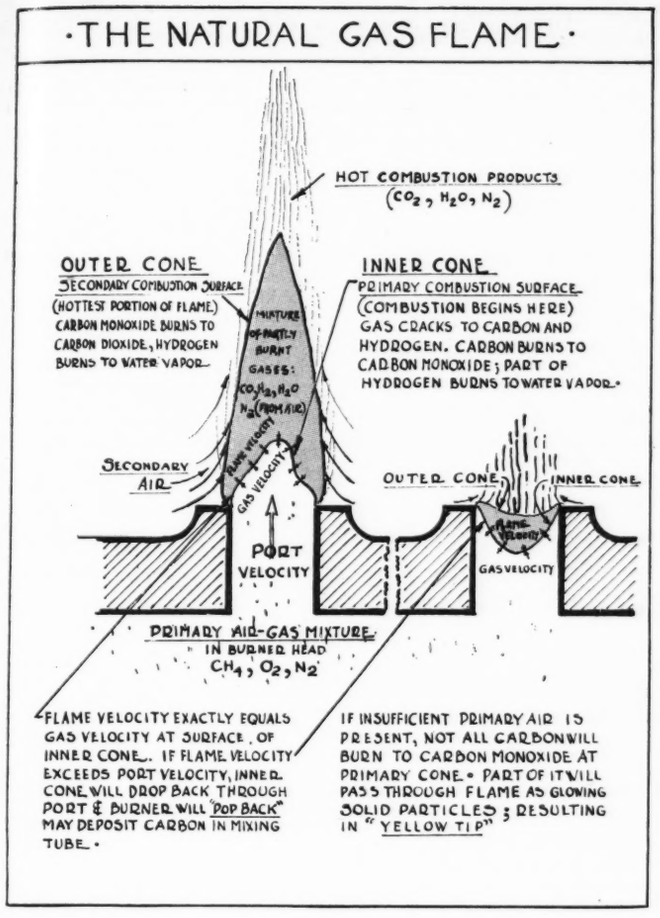

·THE NATURAL GAS FLAME·
HOT COMBUSTION PRODUCTS
(CO_2, H_2O, N_2)
OUTER CONE
SECONDARY COMBUSTION SURFACE
(HOTTEST PORTION OF FLAME)
CARBON MONOXIDE BURNS TO CARBON DIOXIDE, HYDROGEN BURNS TO WATER VAPOR.
INNER CONE
PRIMARY COMBUSTION SURFACE
(COMBUSTION BEGINS HERE)
GAS CRACKS TO CARBON AND HYDROGEN. CARBON BURNS TO CARBON MONOXIDE; PART OF HYDROGEN BURNS TO WATER VAPOR.
MIXTURE OF PARTLY BURNT GASES: CO, H_2, H_2O N_2 (FROM AIR)
FLAME VELOCITY
GAS VELOCITY
SECONDARY AIR
PORT VELOCITY
OUTER CONE
INNER CONE
FLAME VELOCITY
GAS VELOCITY
PRIMARY AIR-GAS MIXTURE
IN BURNER HEAD
CH_4, O_2, N_2
FLAME VELOCITY EXACTLY EQUALS GAS VELOCITY AT SURFACE OF INNER CONE. IF FLAME VELOCITY EXCEEDS PORT VELOCITY, INNER CONE WILL DROP BACK THROUGH PORT & BURNER WILL "POP BACK" MAY DEPOSIT CARBON IN MIXING TUBE.
IF INSUFFICIENT PRIMARY AIR IS PRESENT, NOT ALL CARBON WILL BURN TO CARBON MONOXIDE AT PRIMARY CONE. PART OF IT WILL PASS THROUGH FLAME AS GLOWING SOLID PARTICLES; RESULTING IN "YELLOW TIP"

FIG. 1

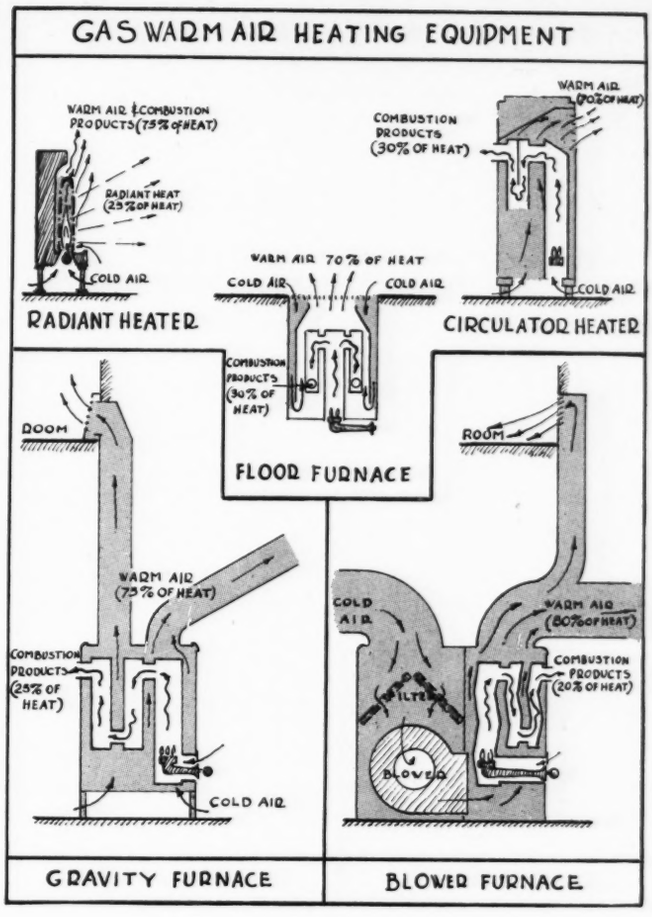


FIG. 2

of control circuit, electrical circuits, thermo-electric controls.

The final subject, controls, was omitted when this portion of the course was given to service and installation personnel who would cover it much more thoroughly in the second portion. Aside from this subject, the course proceeded in a complete circle from the specific subject of heating equipment, through the general subjects, and back to the specific subject of appliance design. This, though not the most logical sequence from the standpoint of material involved, was considered necessary to avoid loss of interest.

Seven one-hour class periods were devoted to the above. Preceding each class, the material to be discussed was distributed in mimeographed form, accompanied by illustrations wherever possible. Typical illustrations are (shown in Figs. 1 and 2.)

As often as possible, the material contained in the illustrations was reproduced on the lecture table. For example, the drawing entitled "The Natural Gas Flame" Fig. 1, was reproduced on the lecture table by means of a Bunsen burner constructed of a length of 20 mm. glass tubing, the bottom end of which was equipped with a gas cock, orifice, and air shutter. This permitted complete demonstration of the structure of the flame, the effects of varying gas rates and primary air ratios upon flame appearance and flame velocity. Another effective demonstration, proving the actuality of combustion products, consisted of a home-made beam balance, on one arm of which a candle was suspended under a glass absorption tower loosely filled with sodium hydroxide pellets. When the candle was lighted, the weight on that arm became greater, indicating that the combustion products had greater weight than the fuel consumed.

Short, unannounced objective quizzes were given, covering the material presented at the one or two previous sessions. The chief value of these consisted in keeping the instructor informed of his success; secondarily they kept the class a little more attentive than it might otherwise have been. Each quiz was confined to five questions, answerable in five minutes by marking "true" or "false," or by selecting the correct answer out of several choices.

A typical question asked is:

A vented gas appliance, such as we manufacture, cannot deliver water vapor or carbon monoxide to the rooms being heated because:

A. The hot metal of the heating element destroys these products and renders them harmless.

B. They are so diluted with air that we do not notice them.

C. The heating element acts as a sort of sieve which lets heat pass into the air stream, but does not let the combustion products pass through.

D. Gas burning in a vented appliance cannot make water vapor or carbon monoxide.

A few minutes was reserved at the end of each class to answer questions. For the most part these had to do with practical applications of the theoretical points discussed in the lesson. If the students themselves did not initiate these questions, the instructor would ask questions of his own along this line. It was necessary to do this continuously, to keep in sight of the class the manner in which the subject material directly affected them.

The second portion of the course was not as clearly mapped as the first, since it was devoted chiefly to servicing specific equipment and controls. Features of our own equipment and

its proper adjustment were discussed and demonstrated. Panel boards were prepared, on each of which was mounted a complete set of control equipment for a specific installation. Terminal blocks, and in some cases gas connections, were provided so that wiring could be completed by the students themselves.

Control and equipment manufacturers' representatives were invited as guest speakers to describe and explain the operation and adjustment of their products. Much of the time was devoted to the discussion of specific problems encountered in the field and reported by class members. Special attention was paid, in discussing these problems, to pointing out how principles studied in the first part of the course could be applied in solving them. The ultimate objective was to make the service man conscious of these principles and give him the habit of trying to apply them himself.

No specific number of class periods is allotted to this second portion of the course, as it depends largely upon the availability of students and of new material to be covered. Refresher material is included as appears necessary but not to an extent of monotonous repetition. It has to be continually kept in mind by the instructor that the previous educational background of members in the same class varies widely; it is necessary to keep the presentation not too far above the heads of the slowest, nor too elementary to hold the attention of the most advanced. However, as the more advanced form the most valuable part of the organization, it is undoubtedly better to lean toward holding their interest than to lean too far toward the least common denominator of the class.

Landslide Breaks P. G. and E. Gas Lines

LANDSLIDES resulting from heavy rains caused serious breaks early last month in the two large pipe lines through which the Pacific Gas and Electric Co., San Francisco, delivers natural gas from Kettleman Hills to Northern and Central California.

Nevertheless all the regular customers had ample fuel for their needs and very few of them even knew about the trouble. The simple explanation is that the company operated several gas manufacturing plants it maintains for such emergencies and also made special arrangements for distribution of gas from other sources.

The "grief" began on March 1 on the Coast Line, which extends from Kettleman Hills to San Francisco and Oakland via Pacheco Pass, Hollister and San Jose. At Los Muertos Creek, 15 miles south of Hollister, a slide tore out about 200 ft. of 20-in. main. Twenty-five men were rushed to the scene and, pending the arrival of large pipe for permanent repairs, laid 600 ft. of 6-in. main around the gap and transmission of gas was resumed on March 4.

Putting in the temporary line proved to be a mighty tough job, because the break was a mile and a half from the highway and to reach it the men had to cross the creek, which then was a raging torrent, and a mile of plowed land that was thoroughly saturated and exceedingly soft—so soft that a caterpillar sank almost out of sight. As a result of this incident, 20 of the crew were unable to get back to their camp at the end of the day and had to spend the night in the open.

On March 3 a slide between Martinez and Crockett caused a break in the 20-in. section of the Valley Line, which runs through the San Joaquin Valley and into Oakland via Pittsburg and Richmond. That break was speedily repaired, but a larger one occurred the next day and the company had to lay 740 ft. of 12-in. main around it. Permanent repairs were completed on March 8.

During these emergencies the company manufactured gas at its plants in San Francisco, Oakland, San Rafael and Stockton. To augment the Bay region's supply, it brought natural gas into Oakland from the Rio Vista field via Napa, Vallejo and a pipe line that crosses the Carquinez Bridge. Also it suspended service to all users of surplus gas.

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Tennessee Products Corp. To Double Coke Capacity

A contract for expansion of its coke and by-product plant at Chattanooga has been awarded by the Tennessee Products Corp. to the Wilputte Coke Oven Corp. of New York. Wilputte is a subsidiary of Semet-Solvay Co., a division of Allied Chemical & Dye Corp.

The contract provides for the construction of 19 Wilputte Underjet By-Product Coke Ovens of the latest type, together with necessary expansion of the associated by-product and benzol plants. The new ovens will have a yearly capacity of 130,000 tons of coke and will enable the Tennessee Products Corp. to supply additional coke to the Alcoa, Tenn., plant of the Aluminum Corp. of America, an important national defense industry.

United Gas Pipe Line Co. Expansion in 1940

TO SERVE new customers, to tie in new gas fields and to further insure that the natural gas service provided by United Gas Pipe Line Co., Shreveport, La., shall be dependable, workmen constructed more than 100 miles of transmission line during 1940 in various sectors of the system and an additional 14 miles were added by purchase.

Largest construction job of the year was the Lirette-New Orleans line which connected the gas reserves of the Lake Long and Lirette fields in South Louisiana to the Baton Rouge-New Orleans main loop line. A multiple Mississippi River crossing nearly two miles in length was also constructed as a part of this line.

To bring natural gas from the Willow Slough, Sea Breeze and Labelle gas fields in southeast Texas into the Goodrich main transmission line at a point on the outskirts of Beaumont, Texas, construction of nearly 20 miles of line was necessary. During the summer, Brooks field, United States military reservation near San Antonio, Texas, was tied in to United's lines. Construction of 1.31 miles of line was completed to serve the field.

Gas reserves of the Abbeville field in the southwest Louisiana district were tied in to United's system early in December with the completion of 12 miles of line. In the Joaquin-Logansport field, Dallas district, where Union Producing Co. completed two enormous gas wells during the year, a gathering system was constructed and tied in to the system November 14 after more than eight miles of line were laid to the Latex-Beaumont main line of United.

Pipe line crews were also kept busy throughout the year rearranging and reconditioning lines and building measuring stations throughout the company's 6443.99-mile system of transmission and gathering lines.

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Servel Refrigerators Aid United States Projects

Several thousand Servel Electrolux gas refrigerators have been ordered by the United States Government for the use in defense and slum clearance projects all over the country. For example, at Corpus Christi, Texas, 251 gas refrigerators have been ordered for apartments of non-enlisted personnel on the new government naval base there. Ninety-eight are scheduled for workmen of the Rock Island government arsenal living there.

Among the housing projects in which gas refrigerators have been installed or ordered are: Boston, Mass., two projects, 1964 refrigerators; Carmelitos, Calif., 608; Birmingham, Ala., 863; Mobile, Ala., two projects, 399; Tampa, Fla., three projects, 1084; Huntington, W. Va., three projects, 500; El Paso, Texas, two projects, 662; Los Angeles, Calif., 302; Fall River, Mass., 357; Charleston, W. Va., two projects, 477; St. Petersburg, Fla., 243; Ft. Lauderdale, Fla., 150.

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Fairport, Ohio, Gets New Gas Rates

The Lake County Gas Co., of Willoughby, Ohio, recently accepted an ordinance by the City Council of Fairport, Ohio, regulating the price that the company may charge the Village of Fairport and its inhabitants.

The average Fairport consumer uses between 1500 and 3000 cu. ft. of gas a month, figures show.

The Story of Gas Service In Motion Pictures

By LESTER MOORE

Advertising Manager, Arkansas Louisiana Gas Co., Shreveport, Louisiana

HOW gas is captured, tamed and made into an obedient and dependable public servant is told in the Arkansas Louisiana Gas Co.'s new talking motion picture, "The Fires Must Never Go Out."

The picture shows the various services performed by gas—how it does the cooking, supplies refrigeration, hot water and heat, and how it benefits every member of the family. It makes it clear that the eternal vigilance of a loyal and well trained staff, under normal and emergent conditions, is needed to keep gas continuously in harness, in the constant service of humanity.

"The Fires Must Never Go Out" opens by recounting the romantic and adventurous history of Arkansas, Louisiana and Texas, the tri-state territory served by the company. It discusses the different factors that have contributed to the modern development of this region, and discloses that it is one of the most richly endowed fields of oil and natural gas in the country.

The picture surveys the Arkansas Louisiana Gas Co. from every point of view to illustrate how this organization with its far-flung system of producing centers—its gigantic maze of pipeline facilities and its smoothly working service organization — delivers to the consumer every minute of every day of the year, through storm and flood, a service which cannot be equalled or surpassed by small publicly-operated organizations, no matter how efficient they may be.

All the operations of the Arkansas Louisiana Gas Co. are explored in telling this story of dependable service. With the effective aid of technical animation, the drilling of gas wells is shown and the course of gas is followed from the gas field to the domestic and industrial user. The picture gives a comprehensive view of the distributing system, a glimpse into the care of meters, and an insight into the quality and types of services rendered by the company to its customers.

The public, it is shown, when served by this company, need never have any fear of the community gas supply failing and the community becoming a ghost town. In small publicly-owned organizations, which derive their supply from nearby wells, the failure of these wells could bring disaster, but the Arkansas Louisiana Gas Co., owning many gas wells far and near, could, in similar circumstances, call on its more distant sources of supply.

Strikingly dramatic is the portrayal of the carrying on of the company's services through the most trying conditions of storm and flood. The miracle of sustained service under almost impossible obstacles is unfolded by a number of thrilling flood scenes.

In conclusion the picture establishes that the business of supplying natural gas to a community is more than a one-man job—or a one-community job —it is the cooperation of hundreds of skilled men and women backed by the resources of an organization big enough to do the job.

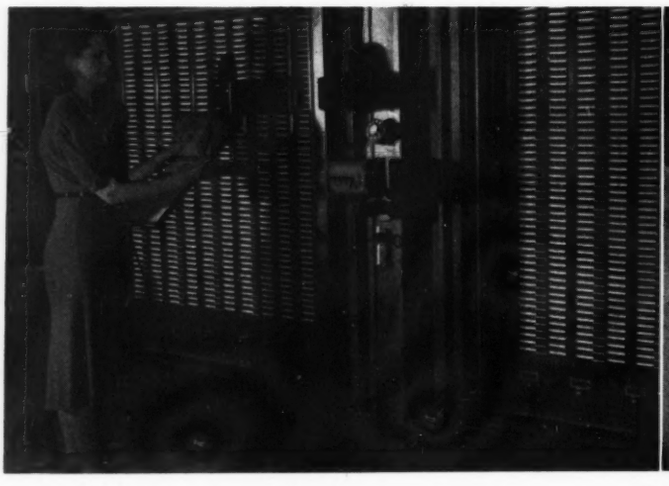
Incidentally, this cooperation was very much in evidence when the picture was being filmed. A number of the employes of the Arkansas Louisiana Gas Co. stayed on duty all night when the scenes showing the company functioning under flood conditions were shot in Shreveport, La. The company also got a restaurant to stay open all night to provide food for these amateur motion picture actors and also for members of the Shreveport Fire Department who were cooperating in making the flood scenes. The fire department was a vital part of the storm scene in providing water from their hoses for an improvised wind machine —consisting of an airplane motor and propeller—to blow into rain.

When the problems are all answered and the tale is told, a comprehensive view of the Arkansas Louisiana Gas Co. operations and its contributions to the territory it serves is obtained.

In the motion picture strip at the right, the pictures, from top to bottom, show: (1) title page; (2) one of the fields from which the gas company gets its supply; (3) tightening a joint between two sections of casing as a preliminary to lowering it during well drilling; (4) gas company worker is seen shutting off the supply of gas at a "Christmas Tree" (a system of valves at a well which reduces pressure before gas flows into the pipe line) to permit repairing a breach in the line; (5) welding a pipe line in the field as a preliminary to lowering it in the trench; (6) no storm is too severe to prevent an emergency crew from repairing a break in the line; (7) here the housewife [illegible]; (8) gas, the invisible hero of "The Fires Must Never Go Out," bursts into flame.

A New Customer Is Introduced to the Service of Michigan Consolidated Gas Co., Detroit, Mich.

1. Mrs. Jones telephones the office of the gas company and asks that the gas be quickly turned on in her new home.



2. Customer service clerk receives call, records order on proper card, sends it to the dispatcher's desk for service.

3. Within a few minutes, dispatcher's desk relays Mrs. Jones' turn-on order to the fitter who is already in the district.

4. Neatly uniformed, Fitter Ed Kubbe arrives to turn on the meter and to check all gas appliances for proper service.

5. Before turning on meter, he checks range to be sure that all of the burners function and have been tightly closed.

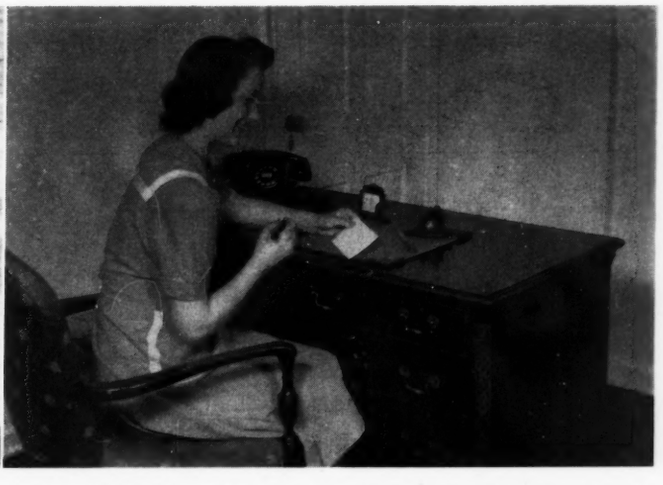
6. He then turns on the meter and checks it carefully to make sure that it will continue operating properly and accurately.

7. He checks the automatic water heater and puts it in operation. Note the paper torch used to safely light the heater.

8. All range burners, adjustments and vents are now inspected and tested for proper operation. No inspections are careless.

9. Finally, the gas refrigerator is checked, adjusted and then put into operation for Mrs. Jones. This completes the job.

10. With Mrs. Jones' home now operating efficiently on the company gas, the fitter makes out his operating report.



11. The final report on a service job well done. Mrs. Jones fills out the return postcard and says "everything satisfactory."

SALES Slants

Discount—75%

IN browsing through the great mass of material which comes to our desk we discovered that Wisconsin Public Service Corp. had adopted a "75% Discount Plan" on the purchase of major appliances, particularly the automatic gas water heater. Hoping to learn more of this we wrote to Wisconsin Public Service Corp.'s advertising manager, Dale Remington, who prevailed upon A. C. Davey, the corporation's new business and merchandising manager at Oshkosh, to send us the following facts:

"The Wisconsin Public Service Corp.'s 75% Discount Plan on major appliances started in February of 1940 as a special deal on IES lamps in the electric and combination territory served by the company. So successful was the scheme from the very start that its extension to major appliances was a certain step. The IES activity sold 14,000 approved lamps (dealer and company) in 90 days, ranking the sale as the leading activity in the country.

"Starting May 1 and extending to the first of the year, the deal applied to gas ranges, refrigerators, and water heaters (automatic). Both gas range and refrigerator sales would unquestionably have topped previous figures if salesmen had been able to concentrate on them. The fact was that gas water heater business kept them so busy that most of the other two appliance sales could be classed as 'floor business,' with the total very nearly equal to business in 1939 when outside selling was vigorous.

"In 1940 automatic water heater business, company and dealer, totaled 856 heaters, compared to 206 in 1939, a figure that approximates those of several previous seasons.

"The 75% Discount Plan seemed to answer nearly every water heater selling need. The idea is simple: the customer purchases any make or type of automatic heater, from the company or a dealer. The sale is registered with our accounting department, and each month, for two years, a comparison is made between the current service bills and those a year previous. 75% of this amount is credited to the customer's appliance account, even as an actual cash installment would be. Thus if the heater, and any other use, raised the bill $2 above the base amount, a $1.50 payment would be credited.

"Credits on cash sales were shown against the service bill, while those on time sales were shown against the regular monthly installment. Credits could equal the full cost of the appliance if less than $60 or that amount if the price were higher.

"In combination territory the customer earned on the combined gas and electric bill a provision that eliminated 'switching' from one service to the other as a means of earning credits without net gain to the company.

"The plan has greatly reduced discussion of operating costs, has removed any desire for a 'trial installation,' and has made the sale of better heaters relatively simple, *i. e.*, as long as the price is going to be earned (or most of it) the customer might as well get a good heater."

We are most grateful to Messrs. Remington and Davey for sending in this interesting account of this successful sales idea.

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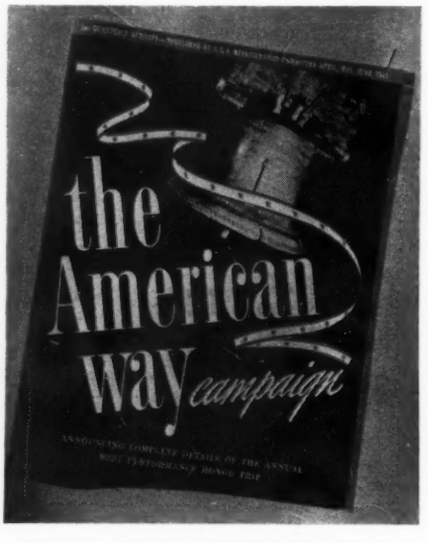
"American Way" Under Way

We see above the third quarter portfolio, "The American Way," issued by A.G.A.'s Refrigeration Committee to cover the April, May and June period of its current 12-month gas refrigeration campaign.

An impartial survey conducted by the Curtis Publishing Co. reveals that the replacement market offers virtually unlimited sales territories for those gas companies eyeing this market for gas refrigeration. The Curtis survey has shown that the majority of families replacing their automatic refrigerators did so because the units were worn out and needed frequent repairs; the users were dissatisfied with performance and noise.

We announced last month that 12 salesmen (instead of six, as last year) would be awarded an all-expense honor trip at the campaign's conclusion in October. We report now that these lucky (and plucky) winners will have a thrill-packed trip to famed Miami, Fla., with an optional excursion to either picturesque Nassau, capital of the Bahamas, or to Havana, Cuba, with its Latin-American charm.



First day: sightseeing, fishing, golf, tennis or swimming; second day, a choice of a flight trip by Pan-American Clipper Ship to either Havana or Nassau; third day, back to Miami for sightseeing and sports. A grand banquet will climax the three-day holiday.

■ ■

Turning On The Heat

We are pleased to report on Volume 1, No. 1, of *Temperature Times*, a monthly published for the automatic heating industry by Minneapolis-Honeywell Regulator Co., Minneapolis.

Minneapolis-Honeywell states that the purpose of this organ is to furnish the industry with news of the automatic heating campaign and general information of interest on the twin subjects of automatic heating and automatic control. The two inside pages of the four-page publication present a colorful panoramic view of the heating campaign, including beautiful girls leading bands and photographs of very comfortably furnished and, of course, properly heated living rooms, and carries the statement that the "mass drive to sell automatic heating to the American Public will start in the March 22 issue of the *Saturday Evening Post* with a full page in color plus color pages in the March issues of *House and Garden*, *House Beautiful*, and *American Home*."

Incidentally, the editors welcome contributions embracing selling experiences, service experiences, or news of general interest to those selling automatic heating.

■ ■

Movie Stars, Also, Use Gas

Movie stars, year in and year out, provide one of the major interests of Mr. and Mrs. Average Consumer. On this premise, the Pacific Coast Gas Association has built its 1941 cooperative advertising campaign which is featuring the gas equipped homes of well-known screen personalities. P.C.G.A.'s Cooperative Advertising Committee this year is headed by A. C. Joy, of the Pacific Gas & Electric Co., San Francisco.

The first advertisement illustrated the home of Mary (My Heart Belongs to Daddy) Martin, and appeared in the January issues of *Sunset* Magazine,

California Parent-Teacher and *California Federation News.*

The February ad took us to the house of Fred MacMurray, while in later presentations we will be privileged to peek in on Brian Donlevy, Richard Dix, Ellen Drew and Robert Preston.

J. S. Spaulding, of the Southern California Gas Co., and Deke Houlgate, Hollywood representative of the American Gas Association, arranged for the photographic series through Paramount Pictures, Inc. The 1941 campaign marks the 13th consecutive year of P.C.G.A. load building advertising. The advertising campaign was prepared by Gerth-Knollin Advertising Agency, of San Francisco, Calif.

■ ■

CP Sales in Pittsburgh

Having just completed one successful CP sales promotional effort, the Natural Gas Companies serving the greater Pittsburgh area (The Equitable Gas Co., the Peoples Natural Gas Co.. and the Manufacturers Light and Heat Co.) are laying plans for their 1941 CP promotional program.

Through the courtesy of F. W. Williams, assistant secretary of the A.G.A.'s Residential Section, we received quite a number of facts on this Pittsburgh campaign. A brief recap of the 1940 campaign reveals that:

1. That 4449 ranges were sold in one month by 514 dealers in 110 towns in the Pittsburgh area.
2. Of these, 460 were CP models.
3. Average gross price of ranges sold was $95.15, as compared with an average gross price of $88.30 during the April, 1940, campaign.

It is believed that the CP emphasis was responsible for the increased average price because the 460 CP ranges, representing 10.4% of the total, were sold at an average price of $119.02.

The 1940 campaign was conducted by the Gas Appliance Promotion Division of Ketchem, MacLeod & Grove who did everything they could think of to make the event entertaining for both the consuming public and the participating salesmen.

The public was invited to participate in a consumer contest which consisted of finishing in 50 words or less the sentence "In selecting the perfect cooking appliance the Modern CP Gas Range gets my vote because—." Dealer store traffic was built by requiring entrants to secure their entry blanks at independent dealers' stores. Completed blanks were then returned either to the dealers who provided them or were sent directly to the Gas Appliance Promotion Division. The prizes in this contest were 10 CP ranges contributed by the manufacturers. In order to obtain even greater interest in the contest, each entrant was presented with the new A.G.A. cook book "Food and Health Cookery With the CP Gas Range." As an added incentive to the public to buy CP ranges, the Gas Appliance Promotion Division furnished a 13-piece glass ovenware set to each person who purchased a CP Range.

The 1500 salesmen, too, had their moment of reward and excitement. To the 10 who sold the greatest number of CP ranges went 17-jewel wrist watches, and all of them learned to keep a sharp lookout for a comely young lady, known as the "CP Shopper" who called at dealers' stores without revealing her identity and gave $1 to each salesman who, in her opinion, presented an adequate CP gas range sales story.

DOTTED LINE ROSCOE . . . . . By Bob Crosby

"That's hot!—Roscoe wins first prize—and the second prize is ten bucks!"

The Atlanta Gas Light Co., Atlanta, Ga., does business in a replica of their original 1856 office during their 85th anniversary sale.

Atlanta Gas Light Company Celebrates 85th Birthday

By J. H. REED
Atlanta, Georgia

UNUSUAL features helped to bring unusual success for the 85th Anniversary Sale of the Atlanta (Ga.) Gas Light Co., which was held from February 8 to March 1, 1941.

To begin with, the Atlanta Gas Light Co. has had an unusual record of service to its community. The firm was the first in Atlanta and the second in Georgia to be incorporated, having received its charter on February 16, 1856.

Even before that date, on Christmas Day, 1855, gas had been lit in the city's street lamps. And, barring a period of something less than two years after the capture of the city by General Sherman, in 1864, the company has given service to the city ever since that date.

To celebrate its 85th anniversary, the Atlanta Gas Light Co. decided upon an anniversary sale—with variations. Two gas ranges were selected from stock and priced at $85.00 with the old stove, as special inducements. All gas appliances except gas floor heaters were offered for a down payment of 85 cents.

Window displays and interior exhibits were arranged to contrast the gas company and its services in 1856 with its appliances and services in 1941.

For example, in the left-hand window, an office front background, typical of 1856, was constructed. At one corner of the front was placed a reproduction of one of the lamp-posts in use when street lights were first turned on in Atlanta. And in the foreground was a huge birthday cake with 85 gas-lit candles. In the right-hand window was shown a modern gas refrigerator against a modernistic background.

The big display room of the company was divided into two sections, with a hall down the center. To the left were arranged three rooms—an office, a dining room and a kitchen, typical of the period. To insure authentic reproduction, the work of preparing, decorating and furnishing these rooms was placed in the hands of Mrs. Wilbur J. Kurtz, one of the historians and technical directors for the motion picture, "Gone With the Wind."

The three rooms were actually lit with gas wall jets, and the kitchen held a wood stove—because, as Mrs. Kurtz explained to visitors, gas ranges had not yet been invented in 1855. Gas, then, was made and used for illuminating purposes only.

On the opposite side of the hall, the company showed every sort of a modern gas appliance, illustrating the changes which have taken place in the production and use of gas.

Even the souvenirs presented visitors contrasted the old with the new. On the "1856 side," visitors were presented with a tin-type of themselves, snapped by a photographer in the costume of the period. On the "1941 side" they were asked to write their name in the bottom of an ash tray. The name was then burned into the tray in a modern gas furnace.

It is estimated that 20,000 people came into the building during the sale period.

Advertising consisted of one institutional and four selling advertisements in each of Atlanta's two metropolitan dailies. Headings in old-fashioned type tied in with the 85th anniversary celebration and the copy in all of the selling advertisements featured the $85.00 ranges and the 85 cent down payments on the other gas appliances.

The campaign was originally planned to last two weeks, but so much public interest was aroused that it was decided to carry the show—and the sale—on for a third week.

And the results?

During the 20 days of the sale, 366 gas ranges were sold, or an average of more than 18 a day.

Nor was this all. Sales for gas refrigerators jumped 80% and those of gas water heaters 20% over sales for the previous February. As a matter of fact, sales for the month were the best of any February on record — despite the fact that the 85th Anniversary Sale lasted only three weeks.

In short, the Atlanta Gas Light Co. demonstrated once more that the way to make a sale successful is to put on a good show; to utilize an interesting event to draw people into the display rooms. For, once in, they can be depended upon to take advantage of the specials offered them.

The Atlanta Gas Light Co. had, in its 85th anniversary, excellent material with which to work. And it made the best of it.

■ ■

Southern California Gas Co. Again Reduces Rates

The sixth major reduction in gas rates since early 1931 went into effect on February 10 in the territory served by the Southern California Gas Co., Los Angeles. According to the company, the reductions have been made possible in part by increased use of gas service, since the company is now serving more than 150,000 more customers than in 1935.

The various rate reductions: $1.420.000 in 1931; $1,070 000 in 1933. $1,284,000 in 1936; $1,026,000 in 1937; $1,303.000 in 1939; together with miscellaneous reductions of $220,000 and the $500.000 February reduction, effect total yearly savings of $6,823,000.

Gas Does Four Big Jobs In New "Luxury Homes"

TWO thousand cars arrive every Sunday at Country Club Heights, development of South Hills Co., Mt. Lebanon, Pa., to see gas do the cooking, house heating, water heating and refrigeration in "Luxury Homes," according to company president Carl M. Bucheit.

Results come, reports Mr. Bucheit, via a dual-purpose program: (1) "a new psychology of real estate advertising"; (2) by stressing "luxury" in a home.

In a series of 10, full-page ads the company, in the first seven ads, arouses public interest by telling of the advantages they should like in a "Luxury Home." The last three ads tell how to reach the "Luxury Homes" and further stresses the advantages of owning a "Luxury Home."

Secondly, South Hills Co. stresses not a "type" house forced upon the industry by competition; but a home with features formerly offered only in a "custom-made" residence.

Prospects drive to Country Club Heights and bring an ad with them, to check on all 16 reasons advertised, proving their need of a "Luxury Home." Salesmen demonstrate the four gas jobs, estimate and prove the lower gas-cost for one year; then "sell" the prospect in his own home.

■ ■

Oklahoma Utilities May Finance Appliance Sales

Gas and electric utilities would be authorized to engage in financing sales of appliances to consumers under a bill pending in the Oklahoma state Senate.

While Oklahoma statutes prohibit public utilities from merchandising appliances and equipment, they may cooperate with appliance dealers in promoting and increasing sales of such merchandise. They have been doing this through permitting use of their offices for display of appliances, and offering assistance in advertising and special sales campaigns.

The Senate Bill now pending would enable gas and electric utilities to go further and loan money to consumers who wish to purchase appliances through dealers.

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Belnap & Thompson, Inc., Open California Office

Belnap & Thompson, Inc., Chicago, sales promotion agency, announce the opening of California offices in San Francisco. The organization has come into prominence as the creators and producers of the "Push Book" and "Push Plan" for use in stimulating and inspiring salesmen.

Among their clients are such concerns in California as: Pacific Gas and Electric, W. P. Fuller & Co., Squirt Co., Sparkletts Drinking Water, Western Auto Supply, Standard Oil, Fruehauf Trailer, and Super Cold.

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Geo. Roper Representative Visits Los Angeles

Carl Sorby, sales promotion manager for the Geo. D. Roper Corp., Rockford, Ill., recently visited Los Angeles, Calif., where he conducted three demonstration meetings during the week of March 10. Over 650 people attended the three dinners at which Mr. Sorby presented the 1941 line of Roper ranges. The dinners were presided over by Tom H. Hall, Southern California and Arizona district manager for the Roper company.

"No Smoke" Means Gas Sales

SPRING of 1941 will witness the second year of "merchandising" by the Laclede Gas Light Co. of St. Louis, Mo., of gas-fired house-heating to replace the former fuels now outlawed by the recent St. Louis anti-smoke ordinance, made a law by Mayor B. F. Dickmann on April 8, 1940. Strict anti-smoke regulations, brought about by the "smoke pall blackouts" which were so onerous in 1939 that national magazines devoted pages to them, now mean that houseowners in the Missouri metropolis are thinking twice regarding their choice of heating methods —and gas is assuming increasingly larger importance in remodeled heating plants.

As its contribution to city-wide efforts to make the new smoke law operative as soon as possible, Laclede is offering a generous inducement to St. Louisans to install smokeless gas heat now. From April 25 to May 31, the company is offering to the public a special Spring Bargain Househeating and Waterheating Combination deal. This deal provides that with the purchase of a gas conversion burner, a gas design furnace or boiler, a 30-gal. crescent automatic gas water heater—regularly priced at $81.50—will be given absolutely free.

The installation of automatic gas heat and an automatic gas water heater completely eliminates all basement work and worry, thereby making more satisfied, enthusiastic users of Laclede's service. Furthermore, it is helping all users of gas for heating to comply 100% with the smoke law.

If, however, a person has an automatic gas water heater, there is an alternate deal. Instead of receiving a 30-gal. water heater free, the customer is given a special Spring bargain discount of $42.90 on his homeheating installation. During this same period, Laclede is offering a limited number of demonstrator conversion gas burners at attractive savings. Anyone buying a demonstrator burner gets $20.50 more or a total savings of $63.40 while this special offer lasts.

This complete story was outlined by W. A. Hudson, head of the Heating Division, at a recent sales meeting. And the words on every Laclede salesman's lips these days are: "The best way to obey the smoke law is to install gas heat—it's always been better, now it's cheaper."

The new ordinance outlaws smoke as a menace to the health and material welfare of the public. It has been estimated that in St. Louis smoke does damage annually to the extent of $15,000,000. That is merely property damage. The effect on health through the cutting off of sunlight and the injurious effect on the respiratory tracts of the citizenry is beyond estimate.

This ordinance places any and all types of appliances or vehicles using a solid liquid or gaseous fuel under the Smoke Commissioner's jurisdiction.

A basic requirement is that if coal or other solid fuel containing more than 23% of volatile matter is used it must be mechanically fired, as in an automatic stoker, so that it will burn without smoke and that when such mechanical equipment is not used, it is permissible to burn only smokeless solid fuel of not more than 23% volatile content. Oil and gas are legal fuels since they are burned smokelessly in automatic equipment.

Under the ordinance, no new fuel burning equipment can be installed or repairs made to installed equipment, or any alterations made in the chimneys or stacks unless they are approved by the Smoke Commissioner. It also provides that a weekly report be made of all such repairs or installations.

Plans for all new buildings must be submitted to the Smoke Commissioner, showing the size of the chimney, type of equipment to be installed, and the fuel to be consumed. A fee ranging from 50 cents to $3.00 for a permit to install will be charged, depending on the size of the equipment. An additional fee will be charged for inspection after installation.

The penalty for violation of provisions of the ordinance is a fine of not less than $25 nor more than $100 for each offense, and each day of violation constitutes a separate offense.

Since the beginning of this legislation, The Laclede Gas Light Co. has taken an active part and cooperated to the fullest extent in promoting smoke abatement. This was not a selfish motive on Laclede's part, but a definite, anxious desire to help make St. Louis a more pleasant city, a better place in which to live—as free as possible from soot, smoke and dirt.

As a result of this and last year's program, the thousands of St. Louis homeowners who have queried Laclede's home-heating department with regard to conversion to gas heat are expected to take advantage of the savings offered.

ASSOCIATION *Activities*

Program Set for Dallas Meeting

THE 36th Annual Natural Gas Convention of the American Gas Association, to be held this year in Dallas, Texas, on May 5, 6, and 7, promises to be the finest meeting that this group has yet had, according to the tentative program released by E. Holley Poe, secretary of the Natural Gas Section. Conventionites will gather at two hotels —the Baker and Adolphus; and a record attendance is expected.

An added feature of the meeting this year will be a post-convention tour of Old Mexico. A special train will leave Dallas on May 8, arriving in Mexico City on May 10. On the next day an excursion will be made to the famous Shrine of Guadalupe, the Pyramids of Sun and Moon and to the Fortress-monastery of Acolman. May 12 will be spent sightseeing in Mexico City. The next day delegates will visit the city of Cholula and Puebla, the "Rome of Mexico." On May 14 and 15 a two-day trip will be made to the silver mining town of Taxco, the grim Palace of Cortez, in Cuernavaca, and the famous "Floating Gardens" of Xochimilco. The group will then return to Mexico City and leave for home, arriving in Dallas on May 17.

Preliminary information regarding the convention program follows:

GENERAL SESSIONS SPEAKERS

Presiding: H. D. Hancock, chairman, Natural Gas Section, A.G.A., and president, Gas Advisers, Inc., New York, N. Y.

Address of welcome—D. A. Hulcy, Lone Star Gas System.

Chairman's address—H. D. Hancock.

T. J. Strickler, Kansas City Gas Co.

"The Fast-Growing Natural Gas Industry"—Alexander Forward, managing director, American Gas Association.

W. E. Derwent, president, Association of Gas Appliance and Equipment Manufacturers, Geo. D. Roper Corp.

"Some Aspects of Health and Safety in the Gas Industry"—Dr. R. R. Sayers, director, U. S. Bureau of Mines.

"The Responsibility of Sales While Under the Ether"—Robert A. Hornby, Pacific Lighting Corp.

TRANSMISSION

Presiding: Julian L. Foster, chairman, Lone Star Gas Co.

"Methods of Maintaining High Pipe Line Flow Efficiency"—J. William Ferguson, Canadian River Gas Co.

"Weather Prophecy"—B. M. Laulhere, Southern California Gas Co.

"Effect of Compressibility Factor on Horsepower Requirements in High Compression (above 1000 lbs. per sq. in.)"—C. Lambert Moore, El Paso Natural Gas Co.

"Progress in Liquefaction and Regasification of Natural Gas Processes"—John A. Clark, Hope Natural Gas Co.

"Metalizing"—Walter Garner, Lone Star Gas Co.

"Symposium on Modern Compressor Station Design"—C. S. Kenworthy, Natural Gas Pipe Line Co. of America; H. P. George, Southern California Gas Co.; O. H. Moore, Lone Star Gas Co.; T. H. Kerr, The Ohio Fuel Gas Co.; H. W. Shubring, Northern Natural Gas Co.; Paul F. Marx, Northern Natural Gas Co.; J. I. Innis, Northern Natural Gas Co.

"American Welding Society Report on Welded Fittings"—E. R. Seabloom, Crane Co.

"The Doctor Calls on a Pipe Line"—Robert D. McClintock and Charles Abbot, Colorado Interstate Gas Co. Discussion: M. V. Burlingame, Natural Gas Pipe Line Co. of America.

"Pipe Line Flow Calculations"—P. McDonald Biddison, consulting engineer, Dallas, Texas. Discussion: R. A. Ransom, Panhandle Eastern Pipe Line Co.

"Pipe Line Flow Calculator"—C. F. deMey, The Ohio Fuel Gas Co.

"Improvement and Use of Pipe Line Construction Equipment"—S. D. Bechtel, W. A. Bechtel Co.

PRODUCTION

Presiding: E. L. Rawlins, chairman, Union Producing Co.

Symposium on Shooting and Acidizing of Wells:

1. Experience in Texas Panhandle and Hugoton fields—J. M. Hanley, Northern Natural Gas Co.

2. Experience in Louisiana — Monroe field.

3. Experience in Eastern States—J. J. Schmidt, The East Ohio Gas Co.; Coleman Hunter, Kentucky-West Virginia Gas Co.; William E. Snee, West Elizabeth, Pa.

4. Open Discussion—

"Deposition of Salt in Producing Formations" — Harry C. Walton, Republic Natural Gas Co.

"Completion of Gas Wells Through Producing Pay to Obtain Data for Reserve Estimates, etc."—J. G. Dickinson, Texoma Natural Gas Co.; Dr. Eugene A. Stephenson, University of Kansas. R. O. Garrett. Arkansas Natural Gas Co.; L. T. Potter, Lone Star Gas Co.

"Cathodic Protection as a Possible Means for Preventing Corrosion of Gas Well Casings"—W. E. Huddleston, Cities Service Gas Co.

"Report from Bureau of Mines on Gas Well Delivery Study"—C. K. Eilerts, Bureau of Mines.

RESIDENTIAL GAS SALES

Presiding: F. M. Rosenkrans, chairman, The Gas Service Co.

Symposium: Executive Responsibility for Sales from a Metropolitan Company—F. X. Mettenet, M. F. Boss, B. N. Wittmann, J. Parfitt, The Peoples Gas Light and Coke Co.

"Executive Responsibility for Sales from a Company Having Inside and Outside Service Areas"—E. J. Stern, Public Utilities Corp.

Cavalcade of Gas:

Master of ceremonies: E. C. Sorby, sales promotion director, Geo. D. Roper Corp.

1. House Heating Presentation — J. G. Tooker, The Gas Service Co.

2. Water Heating Presentation—J. H. Warden, Oklahoma Natural Gas Co.

3. Refrigeration—E. P. Fleischi, Central Illinois Light Co.

H. D. HANCOCK

E. H. POE

INDUSTRIAL AND COMMERCIAL GAS SALES

Presiding: H. Carl Wolf, chairman, Atlanta Gas Light Co.

What's Happening in the Gas Engine Field:

1. From the Technical Angle—Manley H. Clark, Southern Counties Gas Co.

2. From the Business Promotion Angle —A. L. Boehm, The Peoples Gas Light & Coke Co.

Progress Report on A. G. A. Boiler Installation Code—L. S. Reagan, The Webster Engineering Co.

"Year 'Round Air Conditioning and Commercial Refrigeration — New Equipment That Builds Gas Load and Customer Appreciation"—John K. Knighton, Servel, Inc.

"What Controls on Your Installations Mean to Your Customers and to You" (Boilers) — A. C. Grant, Minneapolis-Honeywell Regulator Co.

"The Part Natural Gas Is Playing in National Defense"—W. B. Head, United Gas Corp.

"Wind-up Talk, Where? From Here—And How?"—H. Carl Wolf, chairman, Industrial and Commercial Gas Section.

Symposium: Natural Gas in the Larger Heating Operations.

1. Ceramics—D. D. Beach, Macon Gas Co.

2. Metal Industries—George M. Parker, Mississippi River Fuel Corp.
3. Refineries—Frank S. Kelly, Arkansas Louisiana Gas Co.
4. Power Plants—George V. Roland.
5. Railroads—D. W. Reeves, Oklahoma Natural Gas Co.

ACCIDENT PREVENTION

Presiding: W. H. Adams, chairman, The Manufacturers Light and Heat Co.

Panel Discussion: How to Instill and Maintain a Greater Interest in Accident Prevention.

Chairman—James R. D. Eddy, director, Department of Vocational Education, Austin, Texas.

Executive Representative — C. E. Bennett president, The Manufacturers Light and Heat Co.

Foreman Representative—Ralph Shipp, chief engineer, The Lone Star Gas Co .

Employee Representative—Floyd Callison, Oklahoma Natural Gas Co.

Insurance Representative — Hon. J. P. Gibbs, Casualty Insurance Commissioner, Austin, Texas.

"Fires and Causes of Explosions in the Gas Industry and Some Means of Extinguishing and Prevention"—G. M. Kintz, United States Bureau of Mines.

"The Right Man in the Right Place"—W. R. Davis, Southern California Gas Co.

"Protection of Utility Property Against Sabotage"—A. P. Kitchin, Federal Bureau of Investigation, U. S. Department of Justice.

LUNCHEONS

General Sessions: John Temple Graves II, editor *The Birmingham Age-Herald*, Birmingham, Ala., and others.

Industrial and Commercial Sales Luncheon—Topic: "What Methods Can Be Effectively Used in Cooperating with Your Chamber of Commerce and Similar Organizations?"

Additional committee roundtable luncheons on Accident Prevention, Accounting, Home Service and Residential Sales.

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Wisconsin Association

NEARLY 350 delegates were in attendance at the recent convention of the Gas Section, Wisconsin Utilities Association, held March 17 and 18 at the Wisconsin Hotel in Milwaukee, Wis. The first day, Monday, was devoted to subjects of concern to sales and engineering members of the Association. On Tuesday, the Commercial and Technical Divisions of the Gas Section held their own individual sessions.

The joint session began on Monday morning with reports of Association representatives on the managing committees of the American Gas Association. These were made by E. C. Brenner, Technical Section; A. A. Schuetz, Industrial Section; and L. T. Smith, Accounting Section. These men were followed by Paul DeLeon, Wisconsin Power & Light Co., Madison, chairman of the Commercial Division of the Gas Section of the Wisconsin association, and by H. E. Sweet, Wisconsin Power & Light Co., Madison, chairman of the Technical Division.

Association president, A. P. Gale, executive vice president of the Wisconsin Power & Light Co., Madison, then made an address, "The Gas Industry in Wisconsin," which was followed by "The Gas Industry and the Job Ahead," presented by A.G.A. President T. J. Strickler. In the afternoon, the joint session featured addresses by Bruno Rahn, president, Milwaukee Gas Light Co.; H. A. Watson, field counselor, A.G.A.E.M.; and Ralph Towne, sales promotion manager, Surface Combustion Corp., Toledo.

More than 200 delegates attended the separate session of the Commercial Division on Tuesday. C. A. Debell, Wisconsin Public Service Corp., Sheboygan, was elected chairman of this division, succeeding Paul DeLeon. John O. Felton, Northern States Power Co., La Crosse, was elected vice chairman. The session was opened by Lyle Williams, Wausau Gas Co., the title of whose address was "Load Building Through Counter Appliances." Other addresses made to this division include: "They Buy What They Want—Why Not Hot Water," by C. E. Bartlett, Ruud Manufacturing Co.; "Home Service is a Confidence Game," by Karen Fladoes, home service director, The Peoples Gas Light & Coke Co., Chicago; and "Let's Get Down to Cold Facts," by B. T. Franck, vice president, Milwaukee Gas Light Co.

O. W. BARENSCHER

C. A. DEBELL

At the separate gathering of the Technical Division, O. W. Barenscher, Wisconsin Public Service Corp., Sheboygan, was elected chairman, replacing H. E. Sweet. E. C. Hemes, Milwaukee Gas Light Co., was elected vice chairman. Addresses presented before this group included: "Operation of Butane-Air Plants," by Frank Holaday, district manager, Wisconsin Power & Light Co.; "Appliance Construction — Their Controls and Accessories," by George Helf, Milwaukee Gas Light Co.; "Report on Pilot Outages and Gums," by

Dallas, the Natural Gas Section's convention city, by night.

LEFT: W. L. Woodward, first vice president, Oklahoma Utilities Association, presiding in absence of President R. K. Lane. Seated is J. C. Happenny, association second vice president and re-elected chairman of the Light and Power Division. CENTER: Delegates registering for the convention. RIGHT: F. B. Long, retiring association president, and E. M. Kerr, both of the Oklahoma Natural Gas Co.; C. A. Breitung, president, Southwest Gas Utilities Corp.

Professor O. L. Kowalke, University of Wisconsin; and "Pressure Control and Automatic Pressure Loading," by A. D. MacLean, vice president and chief engineer, Pittsburgh Equitable Meter Co. Both divisions also featured several important discussions and "round tables."

A buffet supper, vaudeville entertainment and dancing were provided on Monday night for the entertainment of the delegates. It is reported that this meeting was the finest ever held by the Wisconsin organization.

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Oklahoma Utilities Ass'n

GAS and electric utilities are now more soundly financed and are prepared to meet the national defense emergency but they must plan carefully to meet the uncertainties of the future. These were among facts brought out by speakers at the 23rd annual convention of the Oklahoma Utilities Association at Tulsa, Okla., March 17 and 18, which was attended by about 460 representatives of utilities and their guests, according to Miss Kate A. Niblack, association secretary.

O. A. Kinzer, utilization engineer, The Dallas Gas Co., Dallas, Texas, reminded the gas people that they are selling only one commodity, "the users' comfort." He cited weather statistics to explode the theory that not much heating is needed in the South and declared that gas heating there is changing rapidly, due to better application of the laws of heat transfer. More efficient heating equipment now is available and house construction generally is better.

Steady extension of federal control over public utilities, sometimes amounting to radical "abuses of power," was deplored by P. McDonald Biddison, consulting engineer, Dallas. He declared that if some present federal control methods continue to expand, utilities will be left as "impoverished, impotent and obsolete as the railroads became for the same reason."

Public utility management and employees were advised to exercise their best judgment not to assume unnecessary service obligations which might increase their legal liability in case of accidents, in a talk by Paul Pinson, an attorney of the Oklahoma Natural Gas Co., Tulsa.

Much progress has been made in development of more correct gas measurement devices and methods, since establishment of the Southwestern Gas Measurement Short Course, 17 years ago, said W. H. Carson, dean of the college of engineering, University of Oklahoma, which sponsors the course.

"Move a microphone into one of your plants occasionally and broadcast your story from there," suggested Richard Lloyd Jones, Jr., vice president and business manager of the Tulsa Tribune, Tulsa.

Speaking on what can be accomplished by a killowatt-hour of electricity, as compared to human labor, C. M. Ripley, General Electric Co., Schenectady, New York, also pointed out that the utilities are among the best and fastest growing customers of the oil and gas industries.

Principal speaker at the annual banquet was Dr. A. Linscheid, president, East Central State College, Ada, Okla., who talked about the obligations and privileges of American citizenship. Reford Bond, chairman, Oklahoma Corporation Commission, also talked at the banquet.

At division meetings, E. C. Joullian, president, Consolidated Gas Utilities Corp., Oklahoma City, was elected chairman of the Gas Division, succeeding A. F. Potter, Bartlesville, manager, Gas Service Co., and J. C. Happenny, president, Oklahoma Power & Water Co., Sand Springs, was reelected chairman of the Electric Division. W. L. Woodward, president, Zenith Gas System, Inc., Alva, first vice president of the association, presided over general convention sessions in place of president R. K. Lane, who was absent. Officers for 1941 had previously been elected on December 5, 1940.

Industrial Gas Conference

SOME 191 registered delegates and approximately 50 visitors participated in the 1941 American Gas Association Conference on Industrial Gas Sales, conducted by the Industrial and Commercial Section of the Association, and held at the Lord Baltimore Hotel, Baltimore, Md., Thursday and Friday, March 13 and 14. The papers, the attendance, and the executive interest all testified to the pyramiding significance of A.G.A. Industrial Gas Sales Conferences since their modest beginning in 1936.

Executives, sales managers, industrial gas men and manufacturers came from many states to be present when H. Carl Wolf, president of the Atlanta Gas Light Co. and chairman of the A.G.A. Industrial and Commercial Gas Section, called the meeting to order for the first Thursday session. Following a welcome to Baltimore by R. H. Tillman, manager, New Business Department of Consolidated Gas Electric Light and Power Co. of Baltimore, Carl P. Mann, manager, Drying Division, The Selas Co., Philadelphia, delivered the first sales-technical paper of the Conference on the subject, "Gas Fuel for Short-Cycle Curing of Industrial Finishes." The featured speaker at the Thursday Luncheon was Charles M. Cohn, executive vice president, Consolidated Gas Electric Light & Power Co. of Baltimore, who interpreted "The Industrial Department's Responsibility to Management."

Leading off the Thursday Afternoon Session under the gavel of George F. B. Owens, vice president of the Industrial and Commercial Gas Section, J. Paul Jones, of Consolidated Gas Electric Light and Power Co. of Baltimore, described a new type application of gas to air-conditioned smokehouses. Among the most significant information released at the meeting was that presented by Frederic O. Hess, president, The Selas Co., Philadelphia, con-

cerning "Important New Developments in Applying Direct Radiant Gas Heat to Ceramic Firing." "A Message from the Managing Director" of the American Gas Association was then presented by Alexander Forward.

To bring the industrial gas fraternity up-to-date on latest equipment developments, a six-way symposium of "Five-Minute Reports on Outstanding 1940-41 Industrial Gas Equipment Developments" opened the Friday Morning Session. Participants were Elmer B. Dunkak, vice president, The C. M. Kemp Mfg. Co.; Slade B. Gamble, National Machine Works, Chicago; Herman Gehnrich, Gehnrich & Gehnrich, Inc., Woodside, L. I.; Porter Hurd, Philadelphia, representing P. C. Osterman, American Gas Furnace Co., Elizabeth, N. J.; O. N. Sellers, Sellers Engineering Co., Chicago; and Alvin M. Stock, The Partlow Corp., New York.

The high caliber of the meeting resulted from the collective work of the officers of the A.G.A. Industrial and Commercial Gas Section and the Committee on Program and Arrangements, Lawrence E. Biemiller, Consolidated Gas Electric Light & Power Co. of Baltimore, chairman. The Industrial Equipment Division of the A.G.A.E.M., Frank J. Fieser, chairman, organized and conducted reception and entertainment features at the Industrial Gas Equipment Club. Charles C. Krausse, assistant manager, Industrial Sales, Consolidated Gas Electric Light & Power Co. of Baltimore, made possible inspection trips in and about Baltimore before and after the Conference.

N.E.G.A.'s Annual Meeting

RESPONDING to the theme, "Research and Sales," over 600 gas men attended the Annual Meeting of the New England Gas Association, held March 27 and 28 at the Hotel Statler in Boston, Mass. The meeting featured 29 speakers, an appliance exhibit, and a five-star panel discussion dinner.

Under the direction of Hall M. Henry, New England Gas & Electric Association, Cambridge, chairman of the program committee, and L. E. Knowlton, Providence Gas Co., Cambridge, vice chairman, the program featured addresses by Alexander Forward, managing director, American Gas Association; Clark Belden, executive secretary, The New England Gas Association; W. E. Derwent, president, Association of Gas Appliance and Equipment Manufacturers; John A. Weiser, president, The New England Gas Association; and T. J. Strickler, president, American Gas Association.

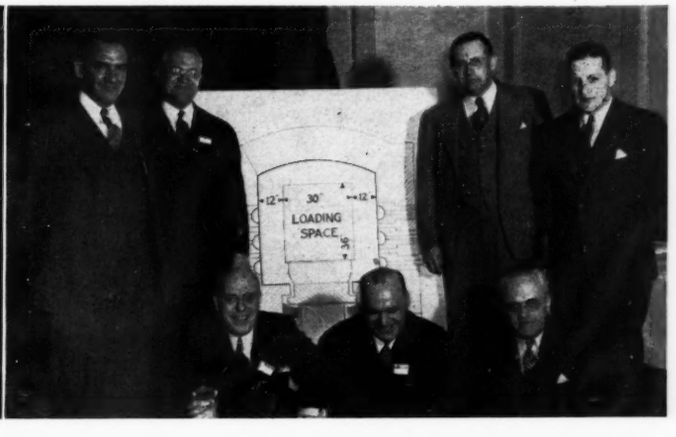
The Appliance and Equipment Exhibit, which was chairmanned for the Association by R. B. Wright, Boston, was engaged in by 40 manufacturers, who displayed a wide variety of the latest appliances and equipment used by the gas industry. This exhibit was under the direction of the Manufacturers Division of the Association.

The panel discussion dinner proved a great success. This discussion was presented by Thomas D. Connolly, of Columbia Broadcasting System; Paul Cornell, formerly chairman of the American Association of Advertising Agencies; J. Davis Danforth, vice president, Batten, Barton, Durstine & Osborn, Inc.; William E. Haskell, assistant to the president, the New York Herald Tribune; and Harford Powell, managing director, Institute of Public Relations, New York. The discussion centered around the general themes of sales promotion, advertising, public relations and business economics. Howard R. Carlson of Hartford represented the Program Committee in securing this outstanding feature.

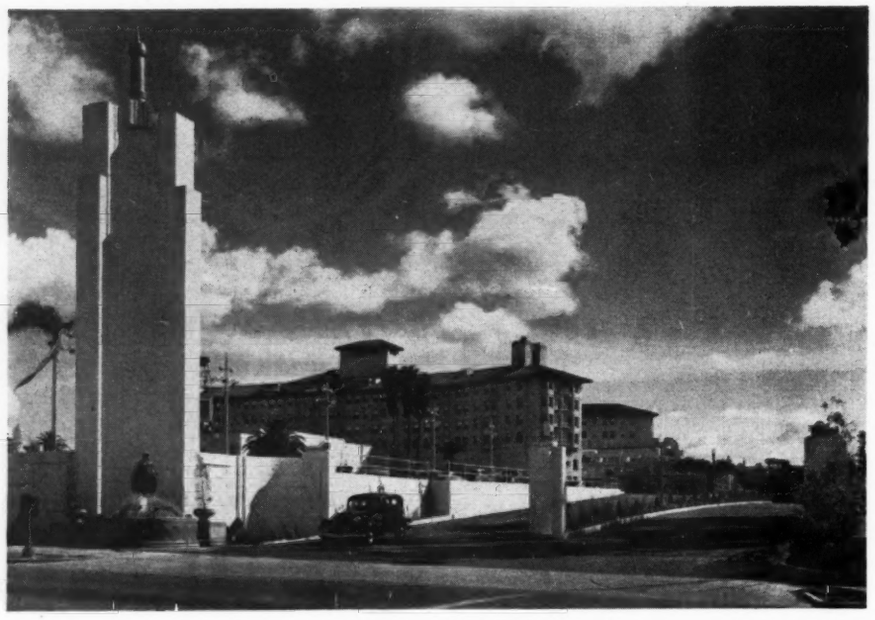
The Association also made its annual "best paper awards." These awards are made for those papers presented by an employe of a member company during the past fiscal year, which papers were judged by the directors of each Division to be the most valuable to the New England gas industry.

The titles of the "best paper" in each division, and its author were: Accounting Division, "Meter Accounting, Statistics and Use" by A. W. Johnston, Jr., of The Hartford Gas Co.; Industrial Division, "Sales Approach for Government Projects" by James F. Pitman of J. C. Pitman & Sons, Inc.; Operating Division, "Problems in Unaccounted-for Gas" by Kurt Richter of The Connecticut Light & Power Co.; and Sales Division, "Tools — Time — Talk" by William H. Dunfey of the Lowell Gas Light Co.

New officers of the Association elected at the Conference are: president, Charles G. Young, manager, Springfield Gas Light Co.; first vice president, John West, regional executive,



AT LEFT: Officers and executives of the A. G. A. Industrial and Commercial Gas Section, together with officers and executives of the host company for the Conference (left to right): R. H. Tillman, manager, New Business Department, Consolidated Gas Electric Light and Power Co., Baltimore; George F. B. Owens, The Brooklyn Union Gas Co., vice chairman, A. G. A. Industrial and Commercial Gas Section; Charles M. Cohn, executive vice president, Consolidated Gas Electric Light and Power Co. of Baltimore; Douglas Burnett, Consolidated Gas Electric Light and Power Co. of Baltimore; H. Carl Wolf, Atlanta Gas Light Co., chairman, A. G. A. Industrial and Commercial Gas Section; Major Alexander Forward, managing director, A. G. A., New York; Eugene D. Milener, secretary, A. G. A. Industrial and Commercial Gas Section, New York. AT RIGHT: The outstanding ceramic firing development reported by Mr. Hess was the culmination of research jointly sponsored by each of the organizations represented by these men (left to right, standing): Leslie Brown, director of research, Lenox, Inc., Trenton; J. P. Leinroth, general industrial fuel representative, Public Service Electric and Gas Co., Newark, N. J.; C. O. Bensel, Public Service Electric and Gas Co., Trenton, N. J.; John Kaufman, eastern sales representative, Allied Engineering Co., Millton, N. J. (Left to right, seated): Eugene D. Milener, secretary, A. G. A. Industrial and Commercial Gas Section, New York; Frederic O. Hess, president, The Selas Co., Philadelphia, Pa.; Dr. James Robeson, chief engineer, Allied Engineering Co., Cleveland, Ohio.



Ambassador Hotel, Los Angeles, convention headquarters for A.G.A.E.M.'s June meeting.

New England Power Service Co., Boston; second vice president, Norman B. Bertolette, president, The Hartford Gas Co.; treasurer, Earl H. Eacker, assistant to president, Boston Consolidated Gas Co.; clerk, Clark Belden, executive secretary, The New England Gas Association, Boston.

The following men, as next year's Division Chairmen, are Association directors, having been elected by the members of their respective divisions: Accounting, John H. Allison, assistant treasurer, Cambridge Gas Light Co.; Industrial, Walter D. McCrea, manager, house heating division, Cambridge Gas Light Co.; Manufacturers, George P. Velte, New England representative, American Stove Co., Boston; Operating, Charles P. Warner, engineer, Manchester Gas Co.; Sales, Ronald A. Malony, sales manager, The Bridgeport Gas Light Co.

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P.C.G.A. Technical Meeting

UNDER the leadership of C. P. De Jonge, San Diego Gas and Electric Co., chairman, the Technical Section of the Pacific Coast Gas Association held a spring meeting in the Hotel Mayfair, Los Angeles, Calif., on March 27 and 28.

The meeting opened with the report of the Distribution Committee, under the chairmanship of J. F. Sauer, Pacific Gas and Electric Co. Papers were presented under the sponsorship of this committee in each of the sub-committee categories—Construction and Maintenance, Leakage, Meters and Regulators, Special Distribution Problems.

M. L. Fort, Pacific Lighting Corp., chairman of the Production Committee of the Technical Section, then made a report on the progress of that committee.

In the afternoon, papers were presented to the delegates under the various sub-committee headings of the Transmission Committee—Compressor Plants, Pipe Lines, Large Volume Measurement and Pipe Protection. This committee is under the general chairmanship of H. P. George, Southern California Gas Co.

Friday morning, the report of the Utilization Committee was made, under the direction of John C. Mueller, chairman of this committee. Papers presented to the members under this classification were under the general topics of Appliance Installation, Appliance Testing, Air Conditioning, and Appliance Servicing. The meeting closed Friday afternoon with the general session meeting, which included the Report of the Committee on Calorimetry made by Guy Gorfield, Southern California Gas Co., chairman.

Between 200 and 300 sales executives attended the Pacific Coast Gas Association's Spring Sales Conference which was held March 6 and 7 at the Ambassador Hotel in Los Angeles.

A departure in handling a convention program was developed by J. E. Kern, general supervisor of domestic sales for Southern California Gas Co., and chairman of the Domestic Sales Committee of P.C.G.A. In these sessions no formal papers were read, but the meeting was conducted as a series of discussions, with each portion being led by a sponsor. The objective was to eliminate non-essential material and to develop subject matter for discussion at the sales meetings to be held at the Annual Convention in Del Monte next September.

The Pacific Coast Gas Association is also now formulating plans for a Northwest Conference, which will be held in Portland, Ore., on June 9 and 10. The annual convention of the association will be held at Del Monte, Calif., on September 10, 11 and 12.

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A.G.A.E.M. 1941 Convention

ACCORDING to R. G. Logue, program chairman for the forthcoming annual convention of the Association of Gas Appliance and Equipment Manufacturers which is to be held at the Ambassador Hotel, Los Angeles, June 3-5, the speakers at the general session of the convention to be held on Wednesday morning will include Fletcher Bowron, Mayor of Los Angeles; W. E. Derwent, president, A.G.A.E.M.; R. A. Hornby, president, Pacific Coast Gas Association; W. R. Smith, general chairman, P.C.G.A. Manufacturers Section; Geo. H. Green, president, National Retail Hardware Association; and C. E. "Deke" Houlgate, special representative, American Gas Association.

A tentative outline of the general schedule of events follows:

June 3 (Tuesday)

Morning—Registration; Product Division and Committee Meetings.

Noon — Product Division and Committee Luncheons.

Afternoon — Open; 3:30, Tea for Women Guests.

Evening—Open.

June 4 (Wednesday)

Morning — Product Division and Committee Meetings; 10:00, General Session (Election and Program).

Noon—Open.

Afternoon—Huntington Library or Hollywood Park Races (optional).

Evening—8:00, Dinner Dance in Cocoanut Grove.

June 5 (Thursday)

Morning — 8:00, Golf Tournament (final tee-off time, 2:30); 10:00, Board of Directors Meeting; A.G.A. Laboratory and Factory Visits.

Afternoon—1.00, Tanner Tour for Women Guests.

Evening—6.00, Cocktail Party. 8:00, President's Dinner.

June 6 (Friday)

All Day—Catalina Island Trip.

As the above schedule indicates, entertainment features of the meeting will include attendance at Hollywood Park Races, a dinner dance in the famous Cocoanut Grove, a golf tournament at the beautiful Wilshire Country Club, where the 18th hole has been included in the American Golf Association's hypothetical All-American course, and an all-day trip to Catalina Island.

Mid-West Gas Association

According to R. B. Searing, secretary-treasurer of the Mid-West Gas Association, and H. E. Peckham, vice president, the 36th Annual Convention of that group will be held at the Hotel Nicollet, Minneapolis, on April 14, 15 and 16. It is reported that an exceptionally large attendance is expected at this series of meetings because of the outstanding program to be presented. Some of the subjects and speakers on the program are: "The gas Industry Faces a Challenge," by T. J. Strickler, president, American Gas Association; "The A.G.A.E.M. Place in the Industry," Willard F. Rockwell, president, Pittsburgh Equitable Meter Co.; "Residential Air Conditioning," by John K. Knighton, sales manager of the Air Conditioning and Commercial Refrigeration Division, Servel, Inc.; "The Natural Gas Industry — Some Comments on Its Past, Present, and Possible Future Trends," by Burt R. Bay, president, Northern Natural Gas Co.; "Development of the Domestic Market for Liquefied Petroleum Gas," by A. B. Cameron, manager, Philgas Division, Phillips Petroleum Co.; "The Future Ahead for Gas," by C. George Segeler, engineer of utilization, A.G.A.; and "The Background of the Present War," by William J. McNally, vice president and general manager of the Minneapolis Tribune.

C. B. DUSHANE

There is also to be an elaborate presentation, "Calvacade of Gas," by a cast of 19 covering the history and development of gas, early salesmanship, cooking, water heating, refrigeration, house heating, and home service phases of the gas business. The Annual Banquet is to be held on the evening of Tuesday, April 15, under the leadership of C. B. Dushane, Jr., president of the Association.

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Southwestern Short Course

A program consisting of 64 papers, with a banquet of all-entertainment, and sixteen exhibitors, indicates three days of profitable activity at the seventeenth annual Southwestern Gas Measurement Short Course at Norman, Okla., April 15-17. G. W. McCullough, Phillips Petroleum Co., Bartlesville, is chairman of the program committee.

Sponsored by the college of engineering, University of Oklahoma, as in former years, the course will open Tuesday morning with a general assembly which will be addressed by Dr. W. B. Bizzell, president of the university; R. L. Rountree, United Gas Pipe Line Co., chairman of the general committee; Wm. F. Lowe, secretary, Natural Gasoline Association of America; E. H. Poe, secretary, Natural Gas Section, American Gas Association; and T. J. Strickler, president, A.G.A.

Wednesday and Thursday mornings also will be devoted to general sessions and each afternoon to classes dealing with subjects and equipment relating to gas measurement.

Chairmen of other committees besides Mr. Rountree and Mr. McCullough are: W. H. Carson, dean of the college of engineering, University of Oklahoma, local arrangements, banquets and entertainment; Earl Kightlinger, Arkansas Louisiana Gas Co., Shreveport, publications; C. A. Gibson, Cities Service Co., Bartlesville, exhibits; R. M. Scofield, Lone Star Gas Co., Dallas, study of practical methods; and Miss Kate A. Niblack, Oklahoma Utilities Association, Oklahoma City, registration and publicity.

CALENDAR

April

American Society of Chemical Engineers—Atlanta, Ga., April 1-3.

Joint Accounting Conference of A.G.A. and the Edison Electric Institute—Netherlands Plaza Hotel, Cincinnati, Ohio, April 7 and 8.

Mid-West Gas Association—Hotel Nicollet, Minneapolis, Minn., April 14-16.

Southwestern Gas Measurement Short Course—College of Engineering, University of Oklahoma, Norman, Okla., April 15-17.

The Maryland Utilities Association Spring Meeting—Lord Baltimore Hotel, Baltimore, Md., April 18.

Gas Meters Association of Florida and South Georgia—Hollywood, Fla., April 21-22.

A.G.A. Distribution Conference—Pittsburgh, Pa., April 21-23.

Missouri Association of Public Utilities—Elms Hotel, Excelsior Springs, Mo., April 23-25.

A.G.A. Hotel, Restaurant and Commercial Sales Conference—Palmer House, Chicago, Ill., April 24-25.

May

A.G.A. Convention, Natural Gas Section—Dallas, Texas, May 5-8.

Mid-West Industrial Gas Sales Council Spring Meeting—Fort Armstrong Hotel, Rock Island, Ill., May 8-9.

National Metal Trades Association—Palmer House, Chicago, Ill., May 8-9.

Indiana Gas Association—French Lick Springs Hotel, French Lick, Ind., May 12 and 13.

Pennsylvania Gas Association—Skytop, Pa., May 12-14.

A.G.A. Production and Chemical Conference—New York, N. Y., May 19-21.

Western Metal Congress and Exposition—Biltmore Hotel, Los Angeles, Calif., May 19-23.

Canadian Gas Association—Hamilton, Ontario, May 20-21.

Natural Gas and Petroleum Association of Canada—Hamilton, Ontario, May 22-23.

June

Association of Gas Appliance and Equipment Manufacturers—Ambassador Hotel, Los Angeles, Calif., June 3-5.

Pacific Coast Gas Association Northwest Conference—Portland, Ore., June 9 and 10.

Pacific Heating and Air Conditioning Exposition—San Francisco, Calif., June 16-20.

Michigan Gas Association—Grand Hotel, Mackinac Island, Mich., June 30, July 1 and 2.

September

Mid-West Gas School and Conference—Ames, Iowa, September 8-10.

Annual Convention, Pacific Coast Gas Association—Del Monte, Calif., September 10-12.

Empire State Gas and Electric Association—Saranac Inn, Saranac, N. Y., September 11-12.

October

23rd Annual Convention, American Gas Association—Atlantic City, N. J., the week of October 20, 1941.

A.G.A.E.M. Appliance and Equipment Exhibition—Atlantic City, N. J., the week of October 20, 1941.

A. G. A. Technical Section

The 18th annual Distribution Conference of the Technical Section, American Gas Association, will be held at the Hotel William Penn, Pittsburgh, Pa., April 21, 22, and 23. A major event for men specializing in all phases of utility distribution work, this year's conference is expected to take on special significance in view of the national defense program. Of added interest is the fact that the meeting will be held jointly with the first annual conference of the newly organized Committee on Motor Vehicle Operation.

Under the leadership of L. W. Tuttle, Public Service Co. of Northern Illinois, and C. S. Goldsmith, The Brooklyn Union Gas Co., who are chairman and vice chairman respectively of the Distribution Committee, a comprehensive program tuned to national problems and events has been laid out for the three-day meeting. It is expected that a record crowd will take part.

The Distribution Conference will be addressed by Clifford E. Paige, president of the Brooklyn Union Gas Co., Brooklyn, N. Y. Distribution committees will report progress in their work, and papers will be presented on meters; cast iron pipe standards; appliance servicing; pipe joints and pipe materials; pipe coatings and corrosion; new devices; street openings, etc. Economies of motor vehicle operation, body design, shop methods, etc., are among the subjects which are to be considered at the meetings dealing with motor vehicles.

There will also be papers by recognized authorities on "Industrial Metering," "When to Remove Locked Meters," "Remington-Rand System for Customer's Service," "Flamedicator," "Adjusting Appliances for Proper Input for Gas-Air Ratio," and "New Ideas and Methods Developed in Distribution Work During the Past Ten Years." Other subjects to be discussed include: Unaccounted-for gas, gas conditioning equipment, regulation and pressure control, distribution design, and deposits in mains and sewers.

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Missouri Association

Harry Hancock, of New York City, chairman of the Natural Gas Section, American Gas Association, will be one of the speakers at the annual convention of the Missouri Association of Public Utilities, April 23, 24, and 25, in Excelsior Springs, Mo., according to word from Jesse Blythe, assistant secretary of the Association.

Other speakers will be: Dr. James S. Thomas, president, Chrysler Institute of Engineering; J. Raymond Schutz, Indianapolis, Ind., president, Standard Life Insurance Co.; J. H. Warden, Tulsa, Okla., general sales manager, Oklahoma Natural Gas Co.; L. A. Hawkins, Schenectady, N. Y., executive engineer, research laboratory, General Electric Co.; P. N. Bushnell, St. Louis, Mo., safety director, Missouri Portland Cement Co.; M. W. Myers, Kansas City, Mo., supervising engineer, Travelers Insurance Co.

President Ben C. Adams, Kansas City, Mo., will preside at the business sessions, and will be host to all available past presidents of the Association at a get-acquainted luncheon, April 24.

A safety meeting under the auspices of the accident prevention committee will open the convention. A. A. Rall, chairman, will preside. A playlet, "An Accident," will be presented by employees of the St. Joseph (Mo.) Railway, Light, Heat & Power Co., followed by "An Investigation of the Accident" by employees of the Missouri Power & Light Co.

E. H. Lewis, a past president of the Asso-

ciation, will act as chairman of the Open Forum for the discussion of timely problems, and questions from the floor, on the afternoon of April 24. The subjects to be discussed are: "General Operating Problems" and "Business Development and Customer Interest."

Fourteen young women and young men from seven electric and gas companies will take part in the annual speaking contest on the evening of April 23. Their subjects will be: For women, "Does the Utility Customer Get His Money's Worth?" For men, "The Utilities' Part in National Defense."

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C. N. G. A. Annual Meeting

According to L. V. Cassady, president, the May meeting of the California Natural Gasoline Association, designated as the "C.N.G.A. Annual Gadget and Kink Contest," will be one of the most interesting in the history of that body. The event will be held at the Lebec Hotel on the Ridge Route half way between Los Angeles and Bakersfield, Calif., on Friday evening, May 9.

All who have developed gadgets used in the natural gasoline industry or who have developed operating kinks used in either office or plant procedure are invited to enter. This invitation is extended to members and nonmembers alike. There are no entry fees and cash prizes and other valuable awards will be given for winning entries.

The purpose of the meeting is to provide a means of bringing out gadgets and operating kinks where all may view the constructive work of others and where the individual with a gadget may have the opportunity to "get it over." Those concerned about protection of patent rights will find a simplified procedure has been arranged for such protection.

Anyone, excepting company officials, in the natural gasoline, natural gas or allied industries may enter a gadget or kink. However, gadgets already on the market are not eligible for entry. The committee in charge of the event has defined a gadget as being "a new device, tool, implement, part or piece of equipment designed to improve the doing of a job in a better, faster, safer or more profitable way." An operating kink is defined as "a new or improved way of doing an old job by rearrangement or different use of existing tools equipment, or devices."

Those interested in entering are advised to communicate with George L. Tyler, secretary, C.N.G.A., 510 West Sixth Street, Los Angeles, Calif. An entry blank will be mailed and this should be filled out and returned with a good working drawing or sketch of the gadget or kink. Adequate facilities for display of gadgets will be available at the meeting. The last day to file entries is April 30, 1941.

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Joint Accounting Conference

The fifth national Accounting Conference of the American Gas Association and the Edison Electric Institute will be held this year at the Netherland Plaza Hotel in Cincinnati, Ohio, on April 7 and 8.

E. N. Keller, Philadelphia Electric Co., chairman of the A. G. A. Accounting Section, and G. H. Bourne, The Commonwealth & Southern Corp., who heads the E. E. I. accounting committees, will direct the conference proceedings as co-chairmen. Assisting them in preparations now about completed is a Planning Committee made up of company and staff representatives under the co-chairmanship of H. A. Ehrmann, Consolidated Edison Co. of New York, Inc., of the A.G.A., and L. A. Mayo, The Connecticut Light and Power Co., E. E. I.

It is reported that emphasis has again been placed on individual meetings of specialized groups which will be conducted along informal lines. This is to insure a free exchange of ideas in accordance with the expressed preference of delegates at previous conferences.

A general session will be held Monday morning, with Monday afternoon and all of Tuesday devoted to group meetings. Many papers will be presented at these group meetings, to be followed by open discussion in which all those present will be urged to participate. Informal "round tables" have been planned for many of these meetings, the procedure being to present selected subject matter in a five- or ten-minute planned discussion and then throw open the arena to all comers. There will be no dinner meeting.

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Florida-Georgia Association

Plans have now been completed for the convention of the Gas Meters Association of Florida-Georgia to be held in Hollywood, Fla., April 20, 21, and 22, according to H. Stuart Johnson, secretary of the association.

Starting with a party and dinner-dance on Sunday, April 20, the meeting will feature general sessions on Monday and Tuesday mornings, while the afternoon sessions are divided into Residential, Commercial, Technical, and Accounting sections, under the chairmanship of Ted Bergman, H. E. Marsolf J. O. Sholar, and E. H. Phillips, respectively.

The general sessions, directed by J. W. Owen, general chairman, will be opened by Association President C. D. Littlefield, and will contain addresses by the following: W. F. Roberts, president, Standard Gas Equipment Corp., Baltimore, "Why Further Cooperation"; "The Great American Salesman," by Lloyd Ginn, American Stove Co., Cleveland; and "Defense," by Percy Wylv, Federal Bureau of Investigation. In addition, the color sound motion picture, "Fun in the Kitchen," will be shown.

The afternoon sessions will also feature many addresses of interest to the men engaged in these branches of the industry. A record attendance is expected.

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Indiana Gas Association

According to H. W. Thornburg, secretary, at the recent meeting held by the officers and directors of the Indiana Gas Association, it was decided to hold the association's 31st annual convention at the French Lick Springs Hotel, French Lick, Ind., on Monday and Tuesday, May 12 and 13.

A Program Committee has been appointed, under the chairmanship of F. W. Budd, Central Indiana Gas Co., Muncie, and consists of the following: Paul Stark, Northern Indiana Power Co., Indianapolis; J. M. Pickford, Northern Indiana Public Service Co., Hammond; and T. L. Kemp, Citizens Gas & Coke Utility, Indianapolis.

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New Outlet For Continental Gas Production

The United Gas Pipe Line Co., Shreveport, La., has just completed the laying of 12½ miles of 8-in. pipe line from Abbeville, Vermilion Parish, Louisiana Gulf Coast, to a point near Milton, La., where the line will tie into the company's main system. The line, which was laid by the Latex Construction Co., will provide outlet for gas production of Continental Oil Co.

Pacific Coast Gas Ass'n Releases 1940 Statistics

DURING 1940 the Pacific Coast gas industry connected 86,000 new customers to its lines. Gas sales were 3.5% greater than in 1939 and 77% greater than in 1930. Annual revenue increased only .5%, thus indicating gas continues its downward price trend. Because of the phenomenally warm fall and winter, domestic sales, including gas for house heating, increased only 2.7%. The acceleration of industry and commerce is reflected in the 12.2% increase in commercial and industrial sales.

The sale of gas appliances in the Pacific Coast states increased substantially in all classifications. Gas ranges increased approximately 14% during 1940 over 1939; gas water heaters, 21%; central heating jobs, 6%; and space heaters, including floor furnaces, 11%. Most of the gains were recorded in California and Arizona, although the northwest held about even in ranges and water heaters and gained 14% in heating sales. While these percentages are derived from a substantial cross section of the industry, any estimate of total unit sales in the area is very much of a guess. Such a guess for 1940 is 200,000 gas ranges, 190 000 water heaters, 32,000 gas furnaces and boilers, and 300,000 floor furnaces and miscellaneous space heaters.

The A.G.A.E.M. reports that, nationally, gas range shipments during 1940 increased 16%, water heaters 16%, warm air furnaces 52%, and gas-fired boilers 37%. National sales were in the order of 1.5 million ranges and a half million automatic water heaters.

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Gas Uses in Metal Industry To Be Shown at Conclave

Latest industrial appliances for heat treating and space heating by gas will be given complete demonstrations during the Western Metal Congress, May 19 to 23 in Los Angeles.

E. M. de Remer and Frank Weiss, of Southern California Gas Co., and Charles L. Ferry, of Southern Counties Gas Co., will be in charge of the display, which will occupy 3000 square feet in the Pan-Pacific Auditorium.

At the same time, the application of gas in heat treatment of metals will be a subject for much scientific discussion in the Congress sessions, which will be held both in the auditorium and the Biltmore hotel.

The Congress, which will be held for the fourth time on the Pacific Coast, will be presented by the American Society for Metals, and 20 other co-operating technical societies, including the Pacific Coast Gas Association, Liquefied Petroleum Gas Association and California Gas and Oil Association.

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Ohio Fuel Gas Co. Gets New Urbana Contract

With a proposal for municipal operation of the Urbana, Ohio, gas distribution system eliminated, at least for the present, the Ohio Fuel Gas Co., Columbus, Ohio, was recently awarded a new four-year contract to provide gas and operate the city's distribution system.

At a specially called meeting of the City Council recently, the councilmen approved by a four-to-three margin an ordinance calling for the gas company to continue operation of the Urbana system during a four-year period. By their vote, councilmen disposed of a two-month controversy on the local gas system, provided the gas company accepts the provisions of the ordinance.

Stearns-Roger Planning Line From Texas to New York

THE Stearns-Roger Manufacturing Co. of Denver, Colo., announced plans recently which it has been preparing for a 1500 mile natural gas pipe line to extend from coastal fields near Corpus Christi, Texas, to New York and other eastern cities. The line, which the company regards as the largest ever contemplated, is to traverse 10 states. An application for construction is pending before the Federal Power Commission and a date for the hearing of objectors will be set shortly, it is reported.

The construction and operation has been proposed by the Reserve Gas Pipe Line Co. and financing of the project has been arranged with Glore, Forgan & Co. of Chicago and New York. Out of Texas the line would pass through Louisiana, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, Maryland, Pennsylvania, New Jersey, and into New York.

The application contained estimates that the area to be served by the line contains 3,500,000 users of natural gas.

The company proposes to construct a 26-in. main transmission line. Plans call for construction of about 15 compressor stations along the line. No gas will be withdrawn from the line for consumption between the coastal fields of Texas and the area specified for final delivery.

■ ■

Underground Fields Located By Measuring Gas Leakages

Exploration for oil may become a much more exact and a direct, rather than an indirect, science, if a recently-announced geodynamic gas-measurement method proves successful. Instead of merely locating and mapping the underground formations that look favorable but which may or may not hide oil reservoirs, the function of modern scientific oil exploration, this new method is said to disclose the presence of petroleum thousands of feet below the surface.

The method is based on the supposed fact that gas from subterranean reservoirs leaks up through the earth and escapes from the surface in minute quantities. Measurement of this escaping gas at various spots, it is believed, gives data which can be used to plot accurately underground oil fields. Interpretation of results, it is reported, even may make it possible to forecast in advance whether the field is a gas, oil, or condensate reservoir. First testing of the new method, above the Music Mountain oil field in Pennsylvania, is said to have brought results which corresponded closely with the known facts about the field, and also to have disclosed the possibility of productive sands in a nearby area which has not yet been drilled.

■ ■

Fair Trade Code for Range Manufacturers Issued

The Fair Trade Practices Committee of the Association of Gas Appliance and Equipment Manufacturers' Domestic Gas Range Division last month announced that revisions in its code, "Statement of Business Practices for Manufacturers of Gas Ranges" had been completed and that the revised code is now available to manufacturers. Last year the committee surveyed the industry and invited suggestions for modifications to the code.

The committee recommends that copies of these practices be also made available to all sales personnel in the gas range industry, and for that purpose the association can furnish as many copies as required.

The members of the Fair Trade Practices Committee are: Chairman, W. Frank Roberts, president, Standard Gas Equipment Corp.; W. L. Cooper, vice president, Florence Stove Co.; C. H. Hoffstetter, president, Odin Stove Manufacturing Co.; Malcolm Leach, sales manager, Glenwood Range Co.; and C. R. Ohnimous, vice president, Hammer Bray Co., Ltd.

Attracting much attention during the recent annual Portland, Ore., Community Chest drive was this one of Portland Gas & Coke Company's Sixth Avenue windows, which was built around the Chest's potent slogan—"Strength Begins at Home." Using "safety" as the theme of the presentation, the gas company display shows the work of one of the Chest's large agencies—the Portland Y. M. C. A. Robert B. Elliott, sales promotion manager, and Ralph H. Jaenicke of the display department arranged the window.

McCall's Magazine Award Design Now Completed

THE bronze plaque which will be first prize in the "McCall's Magazine" Awards for gas utility home-service departments has been designed and is illustrated in the accompanying picture. The Awards, which will be administered by the American Gas Association, will be presented for the first time at the A.G.A. Annual Convention in Atlantic City, N. J., in October, 1941. Entries for the Awards must be in the hands of the Association by August 1.

Large and small gas utility home service departments will be able to compete on an equal footing for the McCall's Magazine awards. Entrants are to submit papers of 2000 words or less covering the work of their home service departments under five heads; (1) the aim of the department, (2) the training of personnel and sales people, (3) community activities engaged in by the department, (4) any increase in scope of activities in the current year over the preceding year and (5) accomplishment of aim.

The gas utility home service director or directing head of the home service department of the company in the United States or Canada, which has made, in the judgment of the Jury of Awards, the most outstanding contribution to the advancement of better living in the home through the promotion of domestic gas appliances and equipment will receive the "McCall's Magazine" Award plaque as first prize, together with a check for $100. Second prize will be a framed illuminated parchment and a check for $50, while the third prize each year will be a framed illuminated parchment and a check for $25.

■ ■

Additional Gas Supply for West Texas Gas Co.

Gas from the North Cowden field, Ector County, Texas, will soon be utilized in west Texas, as the West Texas Gas Co., Lubbock, Texas, recently announced the start of a 15-mile, 6-in. pipe line from the Cities Service cracking plant in that field to a point on their main supply line, a mile and a half east of Odessa. The line will put into the company's main lines gas produced in Ector County to supplement the established supply, which heretofore has been entirely taken from the Red River area 60 miles north of Amarillo. The line is under contract to the Fulton Co. of Lubbock.

INDUSTRY *Personalities*

• It was recently announced that **J. V. Strange,** former vice president of the United Gas Corp., operating division, had been appointed vice president and general manager, succeeding the late **A. B. Groesbeck.** Mr. Strange started his career in the gas business in 1906 and has been with United Gas since 1930. He has been an active member of the American Gas Association for many years and is now serving on the national advertising committee of the A. G. A.

J. V. STRANGE

Mr. Strange announced that **K. L. Simons,** manager of the Houston division of the company, has been made vice president; and **H. P. Carroll,** former general superintendent, has been appointed operating manager of United Gas.

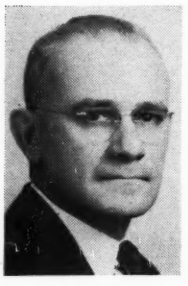
Mr. Simons entered the gas business in 1901. He served gas companies in Auburn, N. Y., Birmingham, Ala., and El Paso, Tex., before going to Houston in 1930 as operating manager of Houston Gas and Fuel Co.

Mr. Carroll entered the employ of United Gas in 1911. In 1925 he was made manager of United's Beaumont division, serving in that capacity until 1930 when he was transferred to the general offices of the company in Houston. In 1930 he became general superintendent of the company, which position he held until his latest promotion to the post of operating manager.

• **Louis J. Nevraumont,** manager of the Modestro district of the Pacific Gas and Electric Co. since 1930, has been appointed chief of the company's personnel department, to succeed **Harry C. Ross,** who died on February 21.

Nevraumont, graduate engineer, started with the company in 1925 as brush tender in a San Francisco plant. Later he became assistant manager of the Stockton division and in 1930 was made manager at Modesto. He was president of the Modesto Chamber of Commerce, president of the Modesto Symphony Orchestra, past president of the Kiwanis Club of Modesto and at Stockton, and past president of the Modesto Rotary Club.

• Selection of **H. H. Stuart** as Portland Gas & Coke Co.'s new purchasing agent to succeed the late **Urban O. Rogers** who died recently, is announced by **E. L. Hall,** vice president and chief engineer.



H. H. STUART

Stuart, a 28-year veteran, joined the gas company organization in 1913 as a transitman and timekeeper and in 1919 was promoted to the position of chief clerk in the operating department, which he held until his latest advance. **M. R. Kowaleski,** a 17-year veteran, fills the vacancy left by Stuart. Portland Gas & Coke Co.'s purchasing department handles expenditures of $1,500,000 annually in equipment, supplies and materials needed in serving 90,000 customers.

• **L. H. Spiner,** executive assistant to **L. Wade Childress,** president of The Laclede Gas Co., St. Louis, has resigned from that position to re-enter the advertising, merchandising and public relations field.

Spiner came to Laclede in October, 1938, from the Shell Oil Co. where he was director of advertising, merchandising, and publicity.

Mr. Spiner will leave his position on April 1, but according to announcement will be available to Laclede for some time thereafter in a consulting capacity.

• During the month of November two engineers resigned from the American Gas Association Testing Laboratories to take up new duties in the gas industry. **L. L. Rice** joined the H-M Thermo Control Co. of Los Angeles, Calif., as engineer, and **Gordon L. Walther** became associated with the Hammel Radiator Corp. of Los Angeles, in the same capacity. Both engineers during their service with the testing laboratories received thorough training in testing different types of gas appliances. This experience should afford them excellent backgrounds for their new responsibilities.

The third engineer, **T. Edward Othman,** was called for service in the United States Army on February 10, 1941. He is the first member of the pacific coast branch to report for military service. He has been assigned as a First Lieutenant in the 604th Camouflage Warfare Division at Fort McArthur, San Pedro, Calif.

• The 1941 central committee on measuring, sampling and testing natural gas and natural gasoline of the American Petroleum Institute's division of production has been appointed, with **F. E. Rice,** Phillips Petroleum Co., Bartlesville, Okla., as chairman, according to **C. A. Young,** secretary of the division. **George P. Bunn,** also of Phillips, is vice chairman, and Mr. Young is secretary.

• **E. S. Larson,** superintendent of the Gas Service Co. at Joplin, Mo., recently was promoted to the position of Joplin manager of the company, succeeding **A. M. Grall.** The

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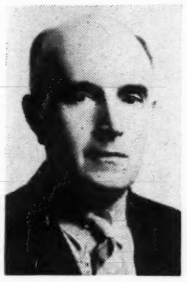
announcement of Mr. Larson's appointment was made by **Ben C. Adams** of Kansas City, president of the Gas Service Co. Arrangements for the promotion were made by **C. H. Koinm** of Kansas City, distribution engineer.

Mr. Grall, who became manager of the Joplin branch of the company three years ago, will assume new duties with the new business department of the company in Kansas, Koinm said.

• **John J. Needham,** former auditor of The Laclede Gas Light Co., has been elected secretary-treasurer of the company, succeeding



J. J. NEEDHAM

MARTIN McVEY

E. L. White, who was recently elected vice president. Mr. Needham joined the company as clerk in 1905.

Martin McVey, former assistant secretary, has been appointed auditor, succeeding Needham. He joined the Laclede forces in 1904 as a messenger boy. He will retain his position as assistant secretary.

• A luncheon honoring **W. E. Houghton,** vice president of Southern California Gas Co., who retired April 1 under the company's uniform pension plan after a service record covering 44 years with the company and its predecessors in Los Angeles, was given at the Biltmore Hotel March 28 by his fellow executives in the gas company.

Mr. Houghton, who served for many years as vice president and treasurer of the Los Angeles Gas and Electric Co. before merger of that company with Southern California Gas Co., entered the gas business in Los Angeles in November, 1897. Born in Colorado, he received his schooling in Wisconsin and came to California shortly after he graduated from a business college there.

In addition to the post he held on retirement, he has served as auditor and comptroller during his years of service with the company and its predecessor.

• **James A. Wilson,** formerly industrial sales manager of the United Gas Corp. at Houston, has been appointed district manager at Kilgore, Tex., it was recently announced. He will replace **R. E. Knight.**

Mr. Wilson entered the employ of the company in 1930 as a salesman at Houston. Two years later, he was advanced to the position of industrial salesman in the general office. In 1933 he was promoted to district manager at Liberty, Texas, in charge of all district operations. Four years later, he was advanced to district sales manager in Beaumont, and in 1939 became industrial sales manager of the company with headquarters in the general offices in Houston.

• The appointment of **Milton C. Sanders** as assistant to the president of the Central Arizona Light and Power Co., Phoenix, Ariz., was announced lately by **Edward H. Coe,** president. Mr. Sanders will take charge of publicity in addition to general supervisory work. He joined the firm in January, 1935, as advertising manager, and later that year was made residential sales manager, which position he held until March, 1940, when he was appointed general sales manager.

A. F. Morairty, who has been associated with the company for many years as assistant general manager, has been appointed vice president in charge of sales, and will take over the direction of all sales and new business of the company, with **J. T. Deppe** as residential sales manager, and **C. T. Yates** as commercial and industrial sales manager.

• **J. F. Sauer,** Pacific Gas & Electric Co., chairman of the Distribution Committee, Technical Section, Pacific Coast Gas Association, has appointed **T. P. Jenkins,** Pacific Gas & Electric Co., to be chairman of the special problems sub-committee, and **L. R. Pickup,** Southern California Gas Co., chairman of the sub-committee on leakage.

• **Governor Neely** of West Virginia recently announced the appointment of former Governor **Howard M. Gore** of Clarksburg as a member of the Public Service Commission of that state, succeeding **Hon. Alex Mahood,** minority member of the Commission, who resigned as of March 5. Mr. Gore was Governor of West Virginia from March, 1925, to March, 1929. No one has as yet been appointed by Governor Neely to succeed **Chairman John J. D. Preston** on the Commission.

• At the first annual meeting of the Willmar Gas Co., Inc., Willmar, Minn., officers elected for the coming year were: **C. I. Tenney,** president; **D. C. Tenney,** vice president; **Latimer Parson,** vice president and treasurer; **Roy A. Hendrickson,** secretary.

• As the first step in planning for the important American Petroleum Institute mid-year convention to be held in Tulsa, Okla., in May, the northeast Oklahoma chapter of the A.P.I., division of production, has named **Herbert W. Ladd** chairman for the ensuing year. Mr. Ladd is head of the materials department of the Stanolind Oil & Gas Co. and is past vice president of the chapter. He has been active in A.P.I. work in Casper, Wyo., as well as in Tulsa.

• **James F. Pollard,** president of the Seattle Gas Co., Seattle, Wash., recently announced the creation of two operating vice presidencies, which posts were filled by the March meeting of the company's board of directors.

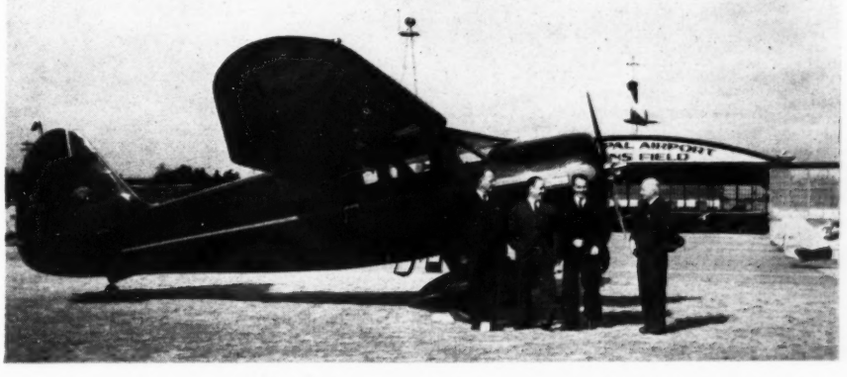
G. R. HORNING G. R. STEERE

By the appointments, made to strengthen the company's technical staff, general superintendent **George R. Horning** is promoted to the position of vice president in charge of engineering and distribution and **George R. Steere,** research expert, gas industry engineer and production man, becomes vice president in charge of production. Steere moves from Portland, Me., where for the past three years he has been assistant general manager of the Portland Gas Light Co. in charge of production.

In his capacity with the Portland company, Steere has had complete charge of the design, purchase and installation of new water gas generating equipment of the most modern type to replace outmoded coal gas equipment, Pollard said. His Portland position was preceded by more than 20 years engineering, research, experimental field work, and industrial management positions for gas industry and engineering firms. He will assume his new position with the Seattle company about April 15.

In making the announcement of Steere's and Horning's appointments, Pollard pointed out that the growth of the gas business in Seattle and new engineering and distribution problems which are becoming pressing because of the great expansion of the city as defense industry workers pour into Seattle demand additional executive man power with experience such as Steere will bring to the organization. Horning has been general superintendent of the company for seven years.

• **W. S. Potter** was recently elected vice president of the Elizabethtown Consolidated Gas Co. at the annual meeting of the board of directors. He will succeed the late **Frances Engel.** Mr. Potter will hold this title in conjunction with his present one as treasurer.



Captain A. E. Higgins, vice president and sales manager of Pittsburgh Equitable Meter Co. and Merco-Nordstrom Valve Co., has saved many hours' traveling time this winter by flying his new five-place Stinson. Only recently he completed a coast-to-coast tour by air to attend the various district sales meetings held by the two companies. The accompanying picture, taken during Captain Higgins' visit to Columbia, S. C., where the southeastern district sales meeting was held in January, shows W. S. Tomlinson, city engineer, Columbia; Captain Higgins; Fred Swaffield, Jr., and F. G. Swaffield, district manager.

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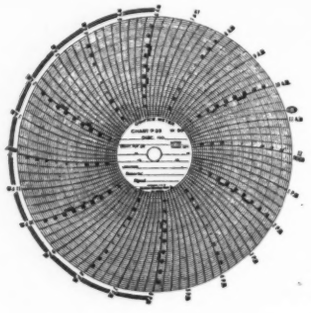

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• **Horace P. Liversidge,** president of the Philadelphia Electric Co., recently announced the appointment of **H. Nedwill Ramsey** as purchasing agent of the company succeeding **R. G. Rincliffe,** who has been made manager of the Station Operating Department.

H. N. RAMSEY

Mr. Ramsey has been active in national gas association activities. He was the chairman of the A.G.A.E.M. Gas Water Heater Division during the successful "Prize Parade" campaign in 1937, also chairman in 1938, and is past chairman of the A.G.A.E.M. Advisory Committee and the General Policy Committee. He took an active part in the Gas Wonderland Exhibit at the New York World's Fair, being vice president of Gas Exhibits, Inc.

• Four promotions in the managerial staff of Portland Gas & Coke Co.'s commercial department are reported by **John J. Winn, Jr.,** commercial manager.

C. E. Diamond, residential sales representative since 1935, has been advanced to the position of residential sales supervisor in charge of all salesmen in the north half of Portland. Winner of the commercial manager's medal in 1939 as most progressive salesman, he went on to lead the field in sales during 1940.

James T. Veatch, for two years agent in Albany, is now in charge of the Oregon city office. He leaves an impressive sales record in Albany as well as in Newberg where he was agent for three years. Prior to that he was office manager at Vancouver, Wash.

W. R. McKay, who replaces Veatch at Albany, was a leading sales representative in the Portland area for two years following his advancement from the credit department in 1938. Before joining the gas company in 1932 he held a managerial position with Fox West Coast theaters.

Robert L. Rice has been made special representative in charge of the Forest Grove office. He started with the company in 1938.

• **Jack P. Davidson,** of Los Angeles, for the past 18 years California and Nevada manager for the Estate Stove Co. of Hamilton, Ohio, has been appointed Southern California distributor for the Occidental Stove Co. of San Francisco, according to advice received from **A. F. Rice**, general manager for the Occidental company.

• The appointment of **J. N. Kint** to the sales force of the Pittsburgh Equitable Meter Co. and Merco Nordstrom Valve Co., Pittsburgh, Pa., has been announced by **H. Boezinger**, district manager. Mr. Kint will take over the sale of meters, valves and other products manufactured by these companies to municipalities, water companies, and Federal and State projects within their southern California territory.

• **A. R. Weis,** president and general manager of the Pacific Pump Works, Los Angeles, Calif., has been elected to the board of directors of the Dresser Manufacturing Co., Bradford, Pa., according to an announcement by **H. N. Mallon,** president. Mr. Weis became president of the Pacific Pump Works, a wholly owned subsidiary of Dresser Mfg. Co., in October, 1940, after serving as vice president and chief engineer.

• **Leslie E. Thomson,** Portland Gas & Coke Co. district agent in Newberg, Ore., has been named winner of the commercial manager's medal for 1940 as the sales representative showing the greatest individual progress during the year.

The announcement was made at the company's annual two-day sales conference in Portland, February 24 and 25, by **John J. Winn, Jr.,** commercial manager, who instituted the award in 1938. Winners the first two years were **C. E, Diamond** and **Ed Meyer,** Portland salesmen. Progress in sales as well as an individual's increased all-around value to the company and community are considered in making the award. Judges are district managers and Portland city sales supervisors.

• Announcement was made recently of the retirement of **Robert Sealy** as treasurer and a director of The North American Co., after more than 35 years of service with the company and subsidiaries.

Mr. Sealy is also retiring from other offices, including those of director and officer of North American Light & Power Co., North American Utilities Corp., and 60 Broadway Building Corp. and director of Wisconsin Electric Power Co., Wisconsin Gas & Electric Co., Wisconsin-Michigan Power Co., Union Electric Co. of Missouri, Mississippi River Power Co. and The St. Louis County Gas Co.

Frederick H. Piske has been elected to succeed Mr. Sealy as treasurer of The North American Co. Mr. Piske is also a director and a vice president of the company.

• The promotion of **W. P. Stone** and his transfer to the Dallas headquarters office has recently been announced by **E. J. Hatzenbuehler,** manager of the Lone Star Gas Co. industrial and commercial sales department. **R. F. Brockschmidt** has been appointed to succeed Mr. Stone as senior industrial engineer for the San Angelo District and the southern half of Community Natural Gas Co.'s Abilene Division.

Mr. Stone, a graduate of the United States Naval Academy at Annapolis, has served Community Natural Gas Co. since 1927 in the West Texas area, where he has been stationed at Abilene and Sweetwater.

• **Marie Hellwig** of the sales department of Laclede Gas Light Co., St. Louis, Mo., was elected president of the Laclede Gas Light Women's Association for 1941 at a general meeting held January 29. Other officers for the current year will be **Mae Maune,** vice president, of Forest Park; **Pearl Tremayne,** secretary, of the customer's accounting department.

• **Calvin Jordan,** Crestline, Ohio, manager for the Ohio Fuel Gas Co., of Columbus, recently severed his connection with that firm to go into business in Cambridge, where he has purchased a retail dairy store. He had been associated with the gas company for over 14 years.

Mr. Jordan will be replaced by **H. W. Powell**, formerly stock manager for the company at Marion, Ohio.

■ ■

New Louisiana Pipe Line

Indications that the United Gas Pipe Line Co., Houston, Texas, is planning the installation of a four-inch natural gas pipe line in Terrebonne parish in the vicinity of the Lirette field, La., were seen recently in its application for various permits to install pipe lines under and across various navigable waterways in lower Terrebonne parish.

Obituaries

Lewis M. Poe

Judge Lewis M. Poe, father of E. H. Poe, secretary of the Natural Gas Section, American Gas Association, died on March 8 in Tulsa, Okla., at the age of 79.

Judge Poe was born and educated in a frontier village in Arkansas. When the Cherokee Strip was opened in 1893, he and his young wife moved to Pawnee, Okla., but two years later decided that there was greater opportunity in another little village in the Indian Territory called Tulsa. From that time, the development of Tulsa and the long career of Judge Poe were closely linked together. He was one of nine men responsible for the incorporation of that city in 1898; he was the fourth lawyer to practice in Tulsa; the third mayor of that city, and, when Oklahoma was admitted to the Union in 1907, Lewis Poe was made the first district judge of that territory.

■ ■

William H. Gartley

William H. Gartley, honorary vice president of the United Gas Improvement Co. and former vice president of the Philadelphia Gas Works Co., died at his home in Chestnut Hill, Philadelphia, on February 13. He was 81 years old, having retired in 1931.

In 1889 Mr. Gartley became chief engineer of the Philadelphia Gas Improvement Co. In 1892 U.G.I. succeeded the Philadelphia Gas Improvement Co. as owners and operators of the plant and Mr. Gartley was retained as chief engineer. He was appointed chief engineer in 1926 and in 1928, vice president in charge of engineering, The Philadelphia Gas Works Co.

■ ■

James M. Bennett

James M. Bennett, assistant to the president of the Philadelphia Electric Co., former newspaper editorial executive, and past chairman of the former Publicity and Advertising Section of the American Gas Association, died in Philadelphia January 27. He was 72 years old.

A member of the American Gas Association since 1922, Mr. Bennett was an active leader of publicity and advertising activities of the Association.

■ ■

Frank H. Golding

Frank Henry Golding, chairman of the board of trustees of the New England Gas and Electric Association and vice president of the Harvard Trust Co. of Cambridge, Mass., died February 3 after a brief illness.

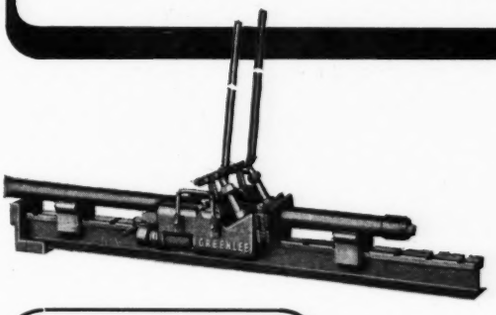
Mr. Golding was president of the New England Gas and Electric Association from 1927 to 1938 after which he became chairman of the board. He was a member of the A.G.A. from 1928 to 1939.

■ ■

Thomas Rath

Announcement is made of the death of Thomas Rath, former advertising manager of American Stove Co., on February 13, at Lorain, Ohio. A pioneer in national ad ertising of gas ranges, Mr. Rath retired on January 1, 1938, after 57 continuous years in the gas range industry.

HOW TO CUT UNDERGROUND PIPE INSTALLATION COSTS



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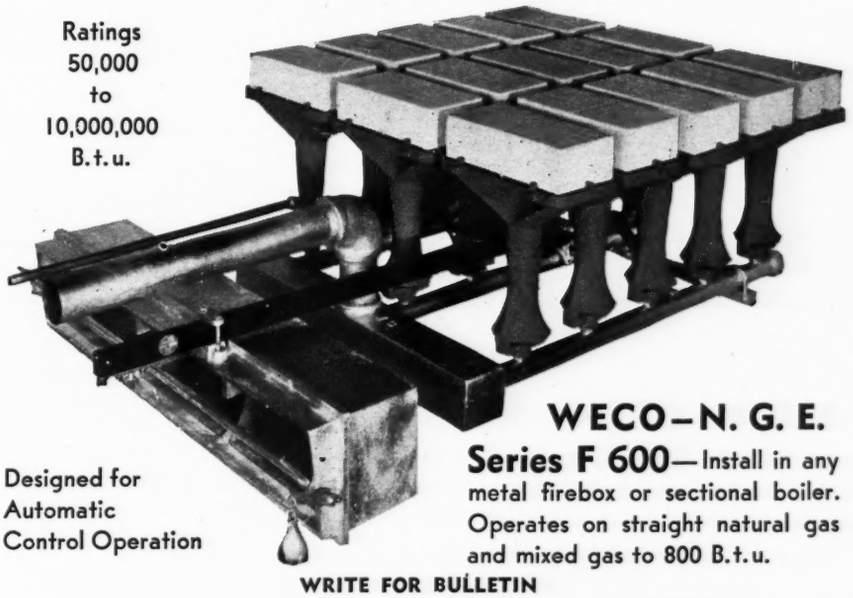

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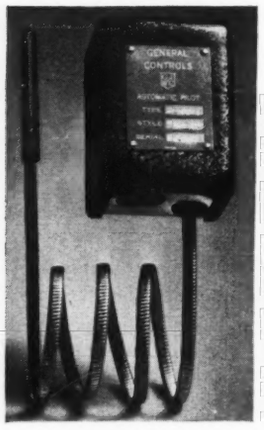

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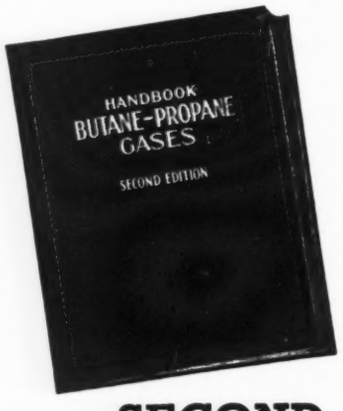

415 Pages

CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design and Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricty, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Transportation: Use with Other Gases: Analysis and Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

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BUTANE-PROPANE News
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Mystery Chef's Broadcasts For Tetley Tea Extended

THE series of broadcasts featuring the Mystery Chef over Philadelphia station WCAU have been so successful that the sponsor, Tetley Tea, starting March 12 broadened the program to include three of the most important radio stations in the East—WEAF, New York; KYW, Philadelphia, and KDKA, Pittsburgh.

In each of his broadcasts the chef offers his cook book, "Be an Artist at the Gas Range," to listeners for 25 cents and the top of one or more packages of Tetley tea. The cook book still includes on each page the original references to the special advantages of gas for cooking, water heating, refrigeration and house heating, and thus represents a valuable selling media. More than 2,500,000 copies of this booklet were used by the gas companies who sponsored broadcasts by the chef under the auspices of Regional Advertisers, Inc. The demand for the book under the sponsorship of Tetley Tea has been so large that another printing is being contemplated.

■ ■

North Carolina Gas Co. To Be Reorganized

Following a recent receivership sale, at which the properties of the North Carolina Gas Co. were purchased for $35,000, it was announced that a new company was being organized to own and operate the properties.

Two modern gas plants, one serving Lexington, Erlanger and Thomasville in Davidson County and the other serving Reidsville, Leaksville, and other communities in Davidson County, were included in the sale. They were constructed about 10 years ago at a cost of several hundred thousand dollars.

The properties were sold to Omar Steele of Muskegon, Mich., who represents holders of more than $300,000 of the $750,000 bonds outstanding against the company.

■ ■

Meter in Federal Bureau Read Every Night

The gas meter in Tulsa, Oklahoma's, federal building is probably the most frequently read customer meter in that city.

Federal regulations require that the meter be read once every 24 hours, at midnight. Each month E. O. Hopper, chief building engineer, must report the number of cubic feet of gas used per degree of temperature. From this report the government can check against established standards to determine whether more gas than necessary is being used.

■ ■

Newark Gas Co. to Move

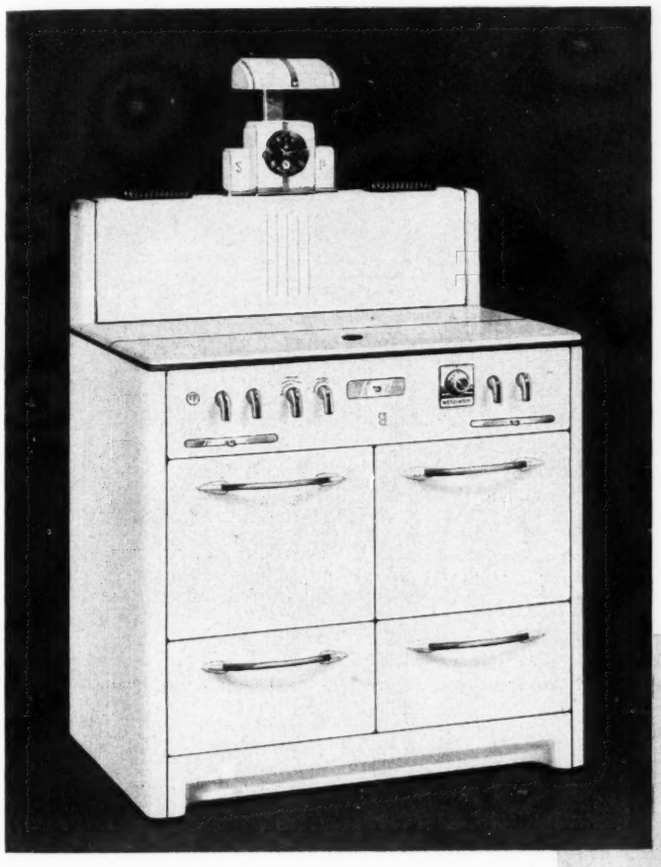
The Newark Consumers Gas Co., of Newark, Ohio, of which Herbert H. Ross is manager, is soon to occupy new quarters in that city. A modern, glass block, air-conditioned building is being erected there, and the gas company now located in the Wehrle building on West Main Street, expects to take possession on or about May 1.

■ ■

Wilsey, Kan., Franchise

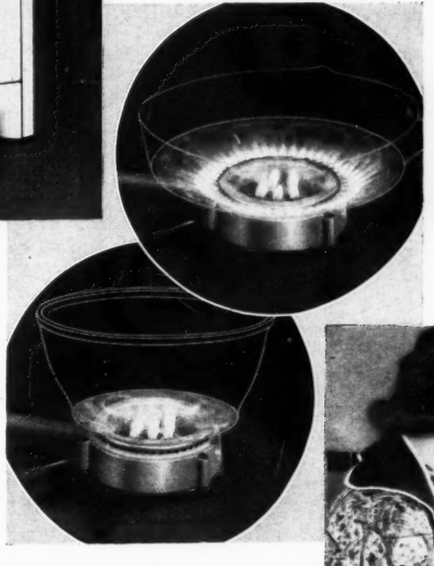
The city of Wilsey, Kan., recently granted to the Central West Utility Co. the right to transport, distribute, and sell natural or manufactured gas in that town for a period of 20 years.

WEDGEWOOD *Gas Ranges*



FEATURE

GIANT AND STANDARD SPEED-PLUS-SIMMER BURNERS



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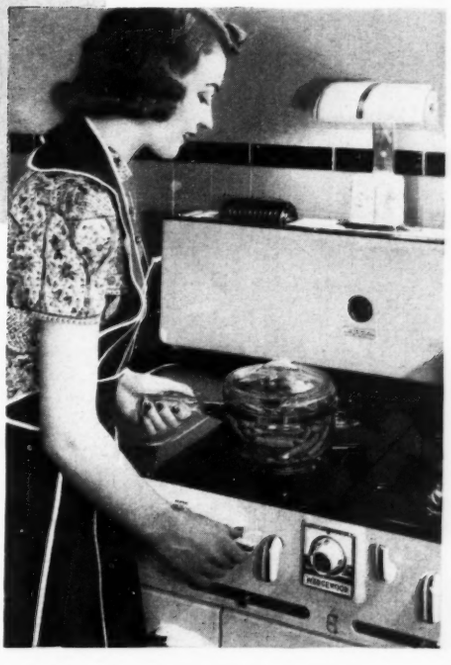

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CURRENT Reading

Technical

Recycling Assuming Rightful Place in Producing Economy — George Weber. *Oil and Gas Journal*, Jan. 2, p. 12. During the past year great strides have been made in development of gas-condensate fields, in the design of plants, and in the methods of producing gas-condensate properties. In this article is compiled an up-to-date list of plants in operation in Texas, Louisiana, and Arkansas, and data on the reservoirs of all condensate fields in these states given, as well as the properties of the condensate produced. The effect of the growing volume of condensate output on local crude markets is also discussed.

Applications of Chemical Engineering —Edited by Harry McCormack. Published by D. Van Nostrand & Co., Inc., 1940. Contents: Measurement of Temperature; Flow of Fluids; Flow of Heat; Evaporation Temperature; Evaporators; Distillation; The Drying of Solids; Humidification and Dehumidification; Gas Absorption; Filtration. Classification and Concentration of Solids; Size Reduction.

Protective Atmospheres for Hardening Steel—J. R. Gier. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 38-41. This paper attempts to explain the fundamental chemical requirements of protective atmospheres for steels and to discuss briefly characteristics of the typical atmospheres now in commercial use. An improved atmosphere is described which appears to meet a definite need in the heat treating of steels. It is shown that, by thoroughly reacting mixtures of air and hydrocarbon gas in controlled proportions, the carbon pressure of the product gas can be regulated to any desired value. This procedure is used to produce a protective atmosphere that can be adjusted to equilibrium with steels of any carbon content.

Effect Upon Furnace Refractories of Protective Gases for High-Carbon Steels — J. H. Loux. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 42-46. Protective atmosphere gas for high-carbon steels presents the same firebrick disintegration problem to heat-treating furnace engineers that is found in the blast furnace. Blast furnace operators solved their problem years ago by using a dense-surface brick which is given a reducing firing period. On a recent installation of hood type furnaces for annealing high-carbon steels, extensive tests were run to prove that what was occurring in the blast furnace could occur in exactly the same manner in a heat-treating furnace.

Annealing Atmospheres from the Combustion Products of Gaseous Fuels — A. G. Hotchkiss. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 32-38. The history of the art of producing annealing furnace atmospheres which will not affect the surface qualities of metals is briefly given. The development and design of equipment for producing controlled atmospheres from combustion gases are traced, and the equipment illustrated by photographs and diagrams. The behavior of various fuels in such equipment and the cost of controlled atmosphere gas from the fuels are discussed. Purity requirements of atmospheres for various uses are stated, and methods and equipment for removing such impurities as water, sulfur dioxide, nitric oxide, and carbon dioxide are described. The applications of atmospheres of various compositions to the treatment of specific metals are discussed.

City Gas for Special Atmospheres — C. R. Cline and C. G. Segeler. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 46-53. Composition and source of several typical protective furnace atmospheres produced from gases and used in such operations as metal annealing without scaling or decarburizing, bright hardening, clean heat treating, carburizing, fire protection, and purging of combustible gases from storage vessels are presented. General methods followed and equipment required in producing and purifying these special atmospheres are discussed. Original data are presented showing the effect of flue gas composition of amount of air supplied for combustion, fuel gas composition, combustion chamber wall temperature, and flue gas temperature when three different fuel gases were burned with insufficient air for complete combustion. Composition of flue products which will result when a fuel gas of given composition is burned with a predetermined air-gas ratio may be accurately estimated from data presented. Minimum aerations supporting combustion of different fuel gases are indicated, and factors in furnace and burner design influencing combustion at low aerations are set forth.

Chemical Equilibrium and the Control of Furnace Atmospheres—J. B. Austin and M. J. Day. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 23-31. The concept of equilibrium and the properties of the equilibrium constant, particularly its significance in relation to the control of conditioned atmospheres in metallurgical furnaces, are described and illustrated by typical reactions for iron and steel.

Gas Carburizing by the Hypercarb Process—W. A. Darrah. *Industrial and Engineering Chemistry*, Jan., 1941, pp. 54-59. The Hypercarb process serves to apply a controlled high-carbon case on steel articles, which greatly increases the hardness and wear resistance of the surface. The process depends on treating steel articles at controlled temperatures for a controlled time by an atmosphere containing hydrocarbons and carbon monoxide in definite percentages. The articles leave the furnace clean and free from

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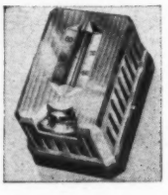

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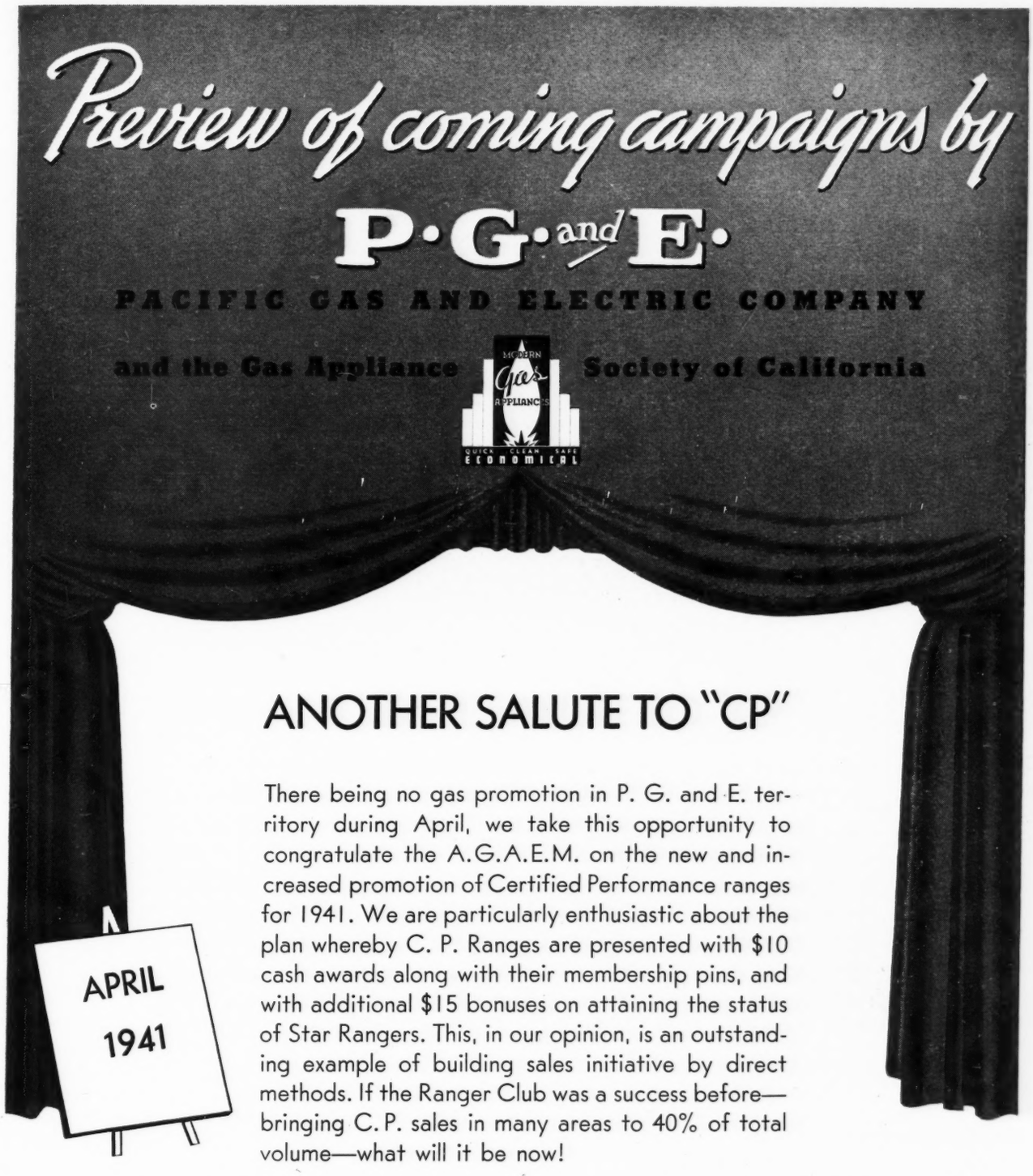

ANOTHER SALUTE TO "CP"

There being no gas promotion in P. G. and E. territory during April, we take this opportunity to congratulate the A.G.A.E.M. on the new and increased promotion of Certified Performance ranges for 1941. We are particularly enthusiastic about the plan whereby C. P. Ranges are presented with $10 cash awards along with their membership pins, and with additional $15 bonuses on attaining the status of Star Rangers. This, in our opinion, is an outstanding example of building sales initiative by direct methods. If the Ranger Club was a success before—bringing C. P. sales in many areas to 40% of total volume—what will it be now!

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DEALERS: By watching this page from month to month you can keep informed of sales promotional campaigns to be sponsored by the Pacific Gas and Electric Company and the Gas Appliance Society. Detailed information will be supplied, as usual, through the mail. If such information is not received, call our local office or write Gas Appliance Society, 1355 Market Street, San Francisco, California

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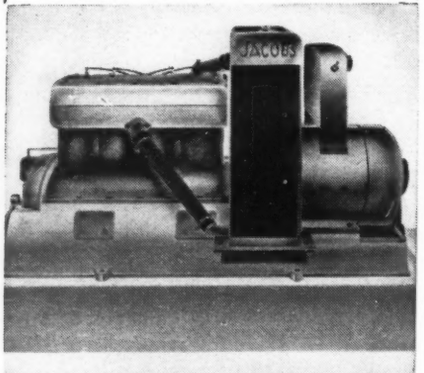

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carbon scale or soot so that no cleaning is necessary. The process is controllable and economical, and has a wide commercial application.

Deviation of Natural Gas from Ideal Gas Laws—G. G. Brown. *Oil Weekly*, Jan. 6, 1941, pp. 26, etc. Part 2. There are many uses that can be made of the compressibility factor (which was explained in the previous installment) in determining the properties of gases under pressure. Gas formation pressure; Prediction of pressure decline curve; Measurement of gas flow; Comparison with field tests; Construction of enthalpy-entropy diagram.

Method of Designing Cathodic Protection Systems—W. F. Rogers. *Petroleum Engineer*, Jan., 1941, pp. 42, etc. The data obtained from an extensive investigation of cathodic protection phenomena have developed the following facts: Steel pipes buried in well-aerated soils have potentials approximating those of gaseous electrodes; as the soil becomes wetter with displacement of soil gases the potential shifts towards that of a ferrous electrode. The seasonal charge in pipe potential results in an increase of approximately 0.12 v. in going from summer to winter conditions. Bare pipes in wet soils develop hydrogen "build-up" potentials to a much greater extent than do pipes in well-aerated soils. A current density of 0.004 amp. per sq. ft. will give 75% protection to bare pipe buried in corrosive soil. A total potential of 0.80 v. measured to a copper sulfate electrode will give complete protection to a well coated pipe. A mathematical relation has been developed that enables calculation of either current "pick-up" for bare pipe or pipe-soil potentials for well-coated pipe. Ground beds should be well salted to give a low resistance and decrease power costs unless the soil resistance is less than 1000 ohm-cm. without salting.

Reconditioning Program Concentrates on the "Hot Spots"—F. H. Love. *Petroleum Engineer*, Jan., 1941, pp. 78-79. Leak reports, other records, and visual inspection of pipe line right-of-way are basis for indicating sections of line requiring repair.

Cold-Bending Methods in Pipe Line Construction—Paul Reed. *Oil and Gas Journal*, Jan. 16, 1941, pp. 42-43. Use of cold-bending methods is being more widely adopted by contractors, both in laying of small lines and on pipe over 12 in. in diameter. In order to reduce time required for making the bends, the costs involved or the size of the bending crew, several methods have been devised. These methods are briefly described.

Effect of Temperature and Pressure on Condensation of Distillate from Natural Gas—S. E. Buckley and J. H. Lightfoot. *Petroleum Technology*, Jan., 1941, p. 13, etc. An experimental separator has been operated, which attained temperatures low enough to permit the observation of optimum temperatures as well as optimum pressures for the separation of distillate from natural gas. The results indicated that most gas-distillate systems are probably characterized by low critical temperatures and pressures, from which it may be expected that most of them will exhibit optimum separation temperatures at certain pressures and optimum separation pressures at all temperatures normally encountered. Also developed was an experimental and analytical technique that yields sufficiently accurate hydrocarbon analyses of lean gases to permit their use with certain simple correlations, to calculate from a few experimental points the complete behavior of any particular gas-distillate mixture.

Natural Gas Analysis Chart—*Power*, Feb., 1941, p. 126. Approximate composition of natural gas on a weight basis can be found from this chart if the heating value and specific gravity are known. The gas from which this chart was computed is a composite of many fields ranging in heating value from 930 to 1150 B.t.u. and in specific gravity from 0.570 to 0.650. Specific gravity, referred to air, and B.t.u. per cu. ft. at 30 in. Hg. at 60° F., are usually known in a routine way to most plants that burn large quantities of gas. Since all the hydrocarbons present are included in the chart, the analysis so obtained is quite complete.

Orifice Coefficients for Thick-Walled High-Pressure Piping—D. A. Sillers. *Petroleum Engineer*, Feb., 1941, pp. 62. 66. Use of coefficients based on standard-weight pipe introduces considerable error when applied to heavier pipe.

Seven-Year Trial Proves Gas Injection Project Profitable—*Oil Weekly*, Feb. 3. 1941, pp. 16-20. A modified type of gas repressuring is singularly successful in an application in Walters pool, northeast Cotton County, Oklahoma. Injection of gas is being used primarily to increase the ultimate recovery, the immediate objective being control of reservoir conditions through input volumes and pressures. Both water encroachment and depletion toward an uneconomic operating level are being retarded by repressuring in a manner similar to recycling. By the time the last well is plugged, the field will have produced 3000 bbls. per acre in excess of the recovery anticipated without repressure control.

Measure of Gas Leakage Applied to Oil Search—S. J. Pirson. *Oil and Gas Jour.*, Feb. 20, 1941, pp. 21, 32. Author describes a new procedure for the exploration for oil and gas. the geodynamic process which measures essentially the rate at which gases escape into the atmosphere, which is a dynamic phenomenon. Abstract of a paper presented before the A.I.M.E., New York City.

World Production of Petroleum Substitutes—V. R. Garfias and R. V. Whetsel. *Petroleum Technology*, Jan., 1941, 5 pp. Statistics are given on the following: Petroleum substitutes from natural gas; Petroleum substitutes from coal; Petroleum substitutes from oil shales; Alcohol.

Minerals Yearbook—Compiled under supervision of H. Herbert Hughes, Bureau of Mines, U. S. Department of the Interior. 1514 pages. Price $2.00 (cloth). A record of the developments and trends in the mineral industry of the United States in 1939, set forth with statistical detail and analysis. Includes informative chapters on the production and sales of natural gas, gasoline, and the liquefied petroleum gases.

Handbook of Fire Protection—Ninth Edtion, 1308 pages; flexible; charts, tables, line-drawings, and half-tones; published by National Fire Protection Association 60 Batterymarch St., Boston, Mass.; $4.50. Complete revision of the Crosby-Fiske-Forster Handbook published in 1936, and of data which have become obsolete, and incorporating detailed treatment of new developments in fire protection within the past five years. Sections concerned with flammable liquids and related subjects were prepared in cooperation with committees of the American Petroleum Institute. A large part of the book is devoted to an exposition of various fire-protection methods and systems and to methods of eliminating or combating industrial fire hazards.

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A. G. A. Releases 1942 Standards

NEW approval standards for portable gas baking and roasting ovens, listing requirements for furnace temperature limit controls and fan controls, and revised requirements for semi-rigid gas appliance tubing and fittings, all of which become effective January 1, 1942, were distributed March 15 to interested manufacturers. These requirements were approved by the A.S.A. Sectional Committee, Project Z21, A.G.A. Approval Requirements Committee at its December 13, 1940, meeting.

Approval requirements for portable gas baking and roasting ovens include within their scope commercial baking and roasting ovens of the stationary deck type that are portable as a unit. These specifications are designed to insure proper construction and performance of equipment of this kind. Listing requirements for furnace temperature limit controls and fan controls are the first of a series of specifications prepared for automatic controls on modern central house heating gas appliances. American Standard Listing Requirements for semi-rigid gas appliance tubing and fittings have been brought up to date with new developments and improvements.

Any manufacturers may submit equipment for test for compliance prior to January 1, 1942. Further information may be obtained from the American Gas Association Testing Laboratories at Cleveland, Ohio.

■ ■

United Gas Pipe Line Co. Stresses First Aid

Three thousand men and women employes of the United Gas Pipe Line Co., Shreveport, La., and associated companies are required to give first aid treatment in emergencies, according to a survey of the results of the company's voluntary first aid training program made public lately.

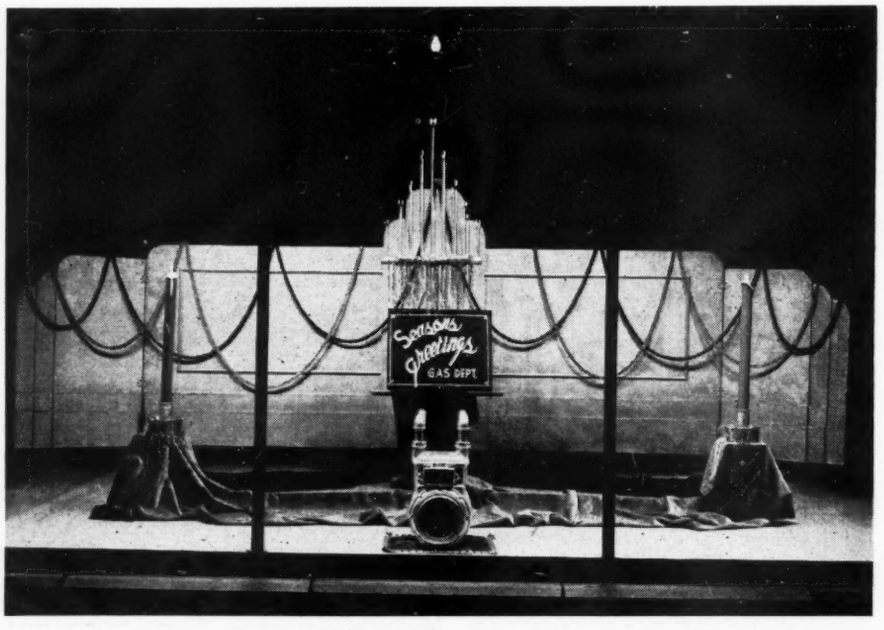
The training program has been carried on over a period of years and its value has been proved many times by cases where lives have been saved and pain lessened by the efforts of company employes who have come upon accidents in the course of their work, according to N. C. McGowen, president of the company.

■ ■

Gas Ordinance Voided by Ohio Supreme Court

The gas rate ordinance passed by the Covington, Ky., City Council in 1939 requiring the Cincinnati Gas & Electric Co., Cincinnati, to furnish undiluted natural gas was ruled ineffective by the Ohio Supreme Court at Columbus, Ohio, recently.

The court upheld an order of the Public Utilities Commission declaring the ordinance to be ineffectve. In addition to providing new rates, the Council had sought to end the right of the company to mix manufactured gas with natural gas.



An expression of the Yu'etide season shown by the gas department of the Southwestern Light & Power Company, Chickasha, Okla. The center represents a Christmas tree with a tiny gas flame burning from each tip; on each side is a candle burning. The tree and candles are getting their gas supply through the demonstration metric meter as shown in the foreground. The display was installed and built by Ted G. Harrington of the Chickasha gas department.

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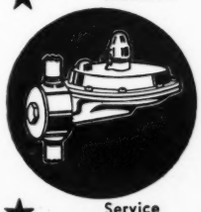

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Boston, Mass.

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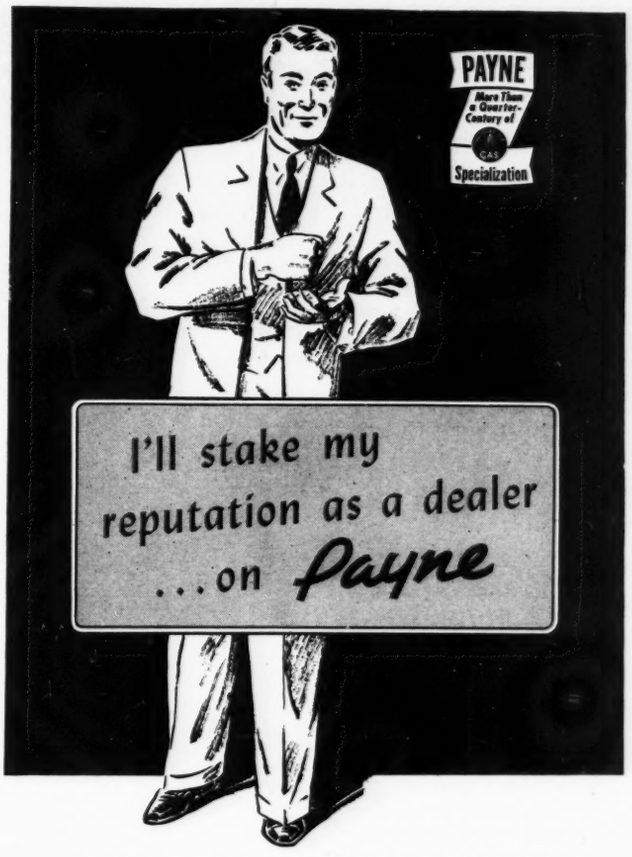
GAS CONTROL SINCE 1892

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

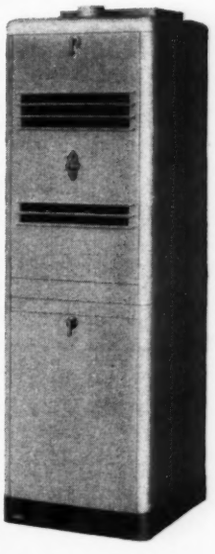


This statement truly reflects the attitude of PAYNEHEAT Dealers, from California to Maine, from Canada to the Gulf.

PAYNE places a value beyond price upon this intangible asset of good will – including the high esteem of gas utility men, Coast to Coast.

It is an asset that dollars cannot buy or measure. It can only be *earned* through year after year after year of *keeping faith* – in quality and fair dealing.

Recommend and sell the gas furnaces and heating units that have won national acclaim for engineering leadership, modern design, high efficiency, and owner satisfaction. A few territories are open for PAYNE representation. Address: J. H. Keber, Sales Mgr.



PAYNE FORCED AIR UNIT
One of 69 models and sizes for every modern heating need. All *double-tested*—by the AGA, and by PAYNE'S own Laboratory with the Industry's highest standards.

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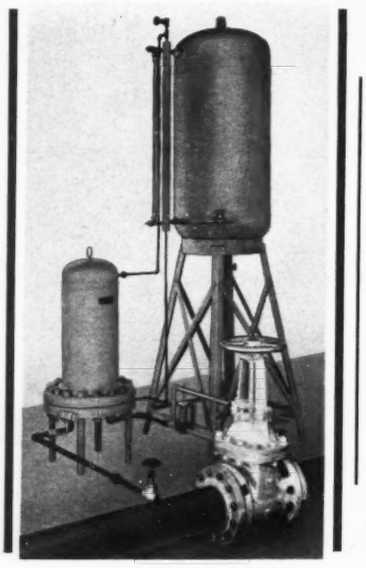

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ODORIZER

Accurate odorizing regardless of Temperature and Pressure Variations. Meter operated for Economy and Accuracy. New Pressure Compensator. Write

PEERLESS MFG. CO.

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ELIMINATE CONDENSATION TROUBLE

VITROLINER

—the permanent chimney lining that totally eliminates chimney deterioration caused by acid-bearing moisture deposited by all types of fuel. Made of Armco Ingot Iron, vitreous enameled both inside and out.

Also manufacturers of Condensation Eliminator and Howle Heat Extractor. Write for free condensation folder and price list.

CONDENSATION ENGINEERING CORPORATION

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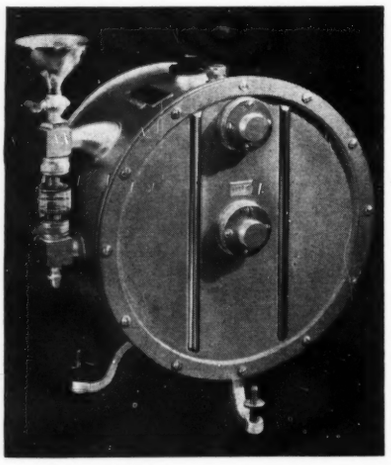
MODERN *Products*

Removable Back Head

American Meter Co., New York, N. Y.

Model: For Wet Test Meters.

Description: A removable back head has been designed by American Meter Co. for its wet test meters, in order to facilitate



cleaning and easier access to the drum. When specified, any of the "American" A1-18 series of wet test meters for general laboratory testing and for calorimetry—including both the low pressure and the new high pressure models—now may be equipped with this new helpful device. Its use is especially convenient where gas conditions make periodical washings advisable. First-hand inspection also is greatly simplified, so that corrosion and other effects may be observed more readily and the need for repairs lessened. The improved back head assembly may be attached not only to new models but also to meters (with either flat or convex back heads) already in service.

■ ■

Gas-Fired Boiler

Bastian-Morley Co., Inc., Laporte, Ind.

Model: Crane Basmor 2WG DeLuxe

Description: In addition to a de luxe type cast iron sectional gas-fired boiler, the package unit includes a circulator, relay, room thermostat and a pressure relief valve. With the exception of the room thermostat, these essentials for a modern forced circulation hot water heating system are connected, wired and mounted in position within the unit's Hammerloy green baked enamel cabinet. The package heating unit is shipped completely assembled. To complete an installation, the heating contractor adds an expansion tank, makes connections to system and gas supply piping and runs the electrical connections to room thermostat and electrical supply. The entire system is then ready for operation. For the home owner, the Crane Basmor package heating unit makes possible infra-red radiant heating at a most economical cost. This package heating unit has the approval of the A. G. A. Testing Laboratories. It is available in three sizes, handling from 415 to 739 ft. of installed 150 B.t.u. emission cast iron radiation.

■ ■

Dust Filter

Reliance Regulator Corp., Alhambra, Calif.

Model: Type "C"

Description: For removing dust from large volumes of gas on distribution lines and in industrial service, Reliance Regulator Corp., announces the new Type "C" Dust Filter. It is equipped with nine filtering elements that are easily accessible for cleaning or replacement. Made in two sizes, 1½" and 2" pipe connections. It is claimed that these Filters operate effectively with low pressure loss and within a wide range of capacities depending on the

pressure differentials. Designed for inlet pressures to 150 lbs. p.s.i. Complete information available on request.

■ ■

Food Warming Table

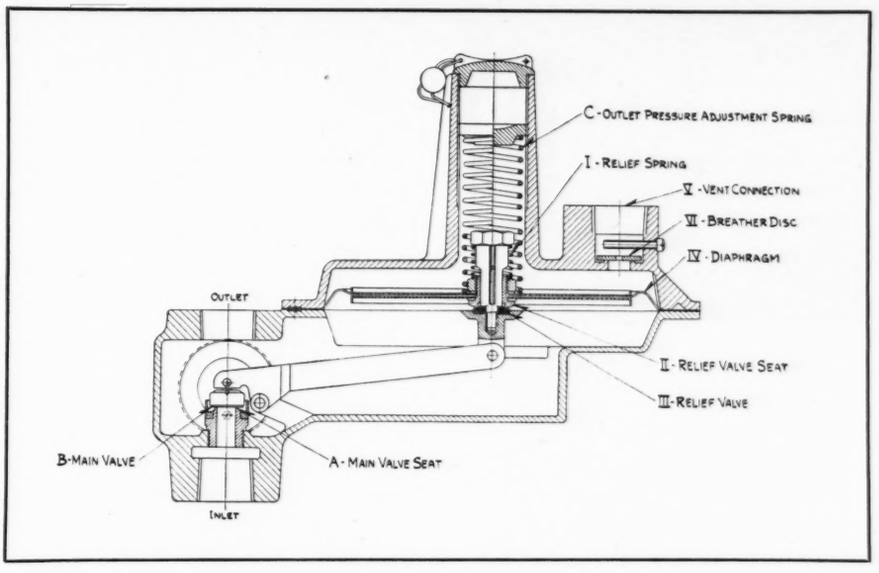
Duke Manufacturing Co., St. Louis, Mo.

Model: Thurmaduke.

Description: A food warming table that operates on an entirely different principle makes its appearance in the equipment field under the name "Thurmaduke." Distribution of heat is obtained by sectional radiation plates instead of the water jacket now found in steam tables. Thus food is heated directly, much more quickly, and sections may be used as needed. Present installations report a reduction of at least two-thirds in fuel bills, and tests conducted by the Laclede Gas & Light Company of St. Louis and other gas utilities throughout America demonstrate that evenness of heat is obtained to a remarkable degree, and that carbon monoxide is entirely absent. Sectional control, besides saving gas, allows the maintenance of the correct temperature for individual foods. Soups

and meats can be held at high temperatures, fish and vegetables at medium temperatures, and mashed potatoes at low temperatures—impossible in gas equipment heretofore. Hence foods reach the consumer looking better and tasting better, waste due to evaporation from excess heat is eliminated, and the speed and economy of gas is retained. Installations are faster and more economical. Plumbing connections are eliminated. Food storage is odorless, free of musty smell of boiling water. Additional features of the new table include: an insulated body of baked enamel in a neutral light color; die-stamped, stainless steel top plates that are precision fit and interchangeable; parts and extras completely standardized, thus reducing cost of both; selected close-grained carving board of Michigan maple; and bell-shaped adjustable feet to obtain evenness on uneven floors.

■ ■

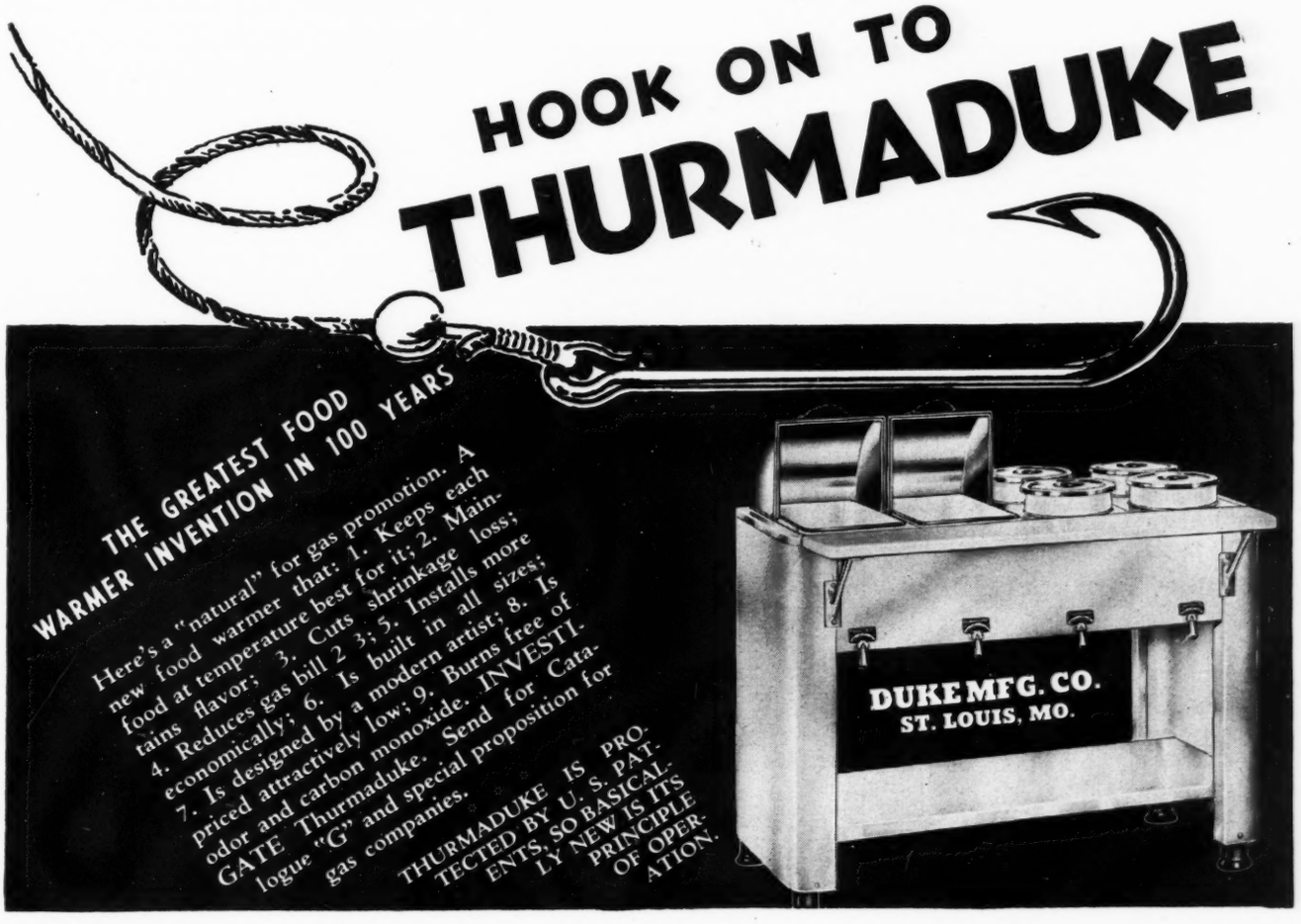


Service Regulator

Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

Model: Type B Ejector Service Regulator

Description: This service regulator can now be furnished complete with an internal relief valve. According to the manufacturer, it is extremely important that service regulators, whose principal function is to reduce higher distribution pressures to pressures suitable for meter and house piping, perform this task of reducing with a maximum of safety. The purpose of the internal relief valve is to prevent pressures in excess of those for which the regulator is set from reaching the house lines. Operation of this device is explained by referring to the accompanying illustration. In normal operation, as a pressure regulator under standard conditions, spring I operates to hold valve III on seat II. Spring I is a heavy, nonadjustable spring, and can exert a very strong force to insure a tight closing of the valve III, on soft seat II. If because of dirt on the main regulator valve, or a nicked seat, main valve B fails to close, pressure will build up under the main diaphragm IV, above the normal lock off pressure. When this pressure increases, multiplied by the area of the large diaphragm IV, is sufficient to overcome spring I, valve III is raised off its seat, and the excess pressure is relieved through the fluted area of valve III, into the top diaphragm chamber. Thence, this gas flows out through vent connection V, by raising breather disc VI. Obviously, vent connection V must be piped to a safe place for the venting or unburned gas. On relieving this over-pressure, spring I will close the valve. Valve III is guided accurately to its seat, thus insuring a positive shut-off.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THURMADUKE
THE GREATEST FOOD WARMER INVENTION IN 100 YEARS
Here's a "natural" for gas promotion. A new food warmer that: 1. Keeps each food at temperature best for it; 2. Maintains flavor; 3. Cuts shrinkage loss; 4. Reduces gas bill 2 3; 5. Installs more economically; 6. Is built in all sizes; 7. Is designed by a modern artist; 8. Is priced attractively low; 9. Burns free of odor and carbon monoxide. INVESTIGATE Thurmaduke. Send for Catalogue "G" and special proposition for gas companies.
THURMADUKE IS PROTECTED BY U. S. PATENTS, SO BASICALLY NEW IS ITS PRINCIPLE OF OPERATION.
DUKE MFG. CO.
ST. LOUIS, MO.

Appliance Regulator

Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

Model: No. 094-02.

Description: In announcing the EMCO Appliance Regulator No. 094-02, the manufacturer, Pittsburgh Equitable Meter Co., states that this small capacity type regulator was designed primarily "to provide accurate pressure control on gas refrigerators, pilot lights for gas and oil burners, governing controls, small gas appliances and other equipment having a low gas consumption." Its modern appearance and compact size, as can be seen from the accompanying illustration, make it especially suited for such work. Fluctuating line pressures, which cause pilot flames to raise and lower with resulting unreliable and inefficient functioning, are held constant and the flames can be set and maintained at the proper height for most efficient and economical operation, according to the makers, by installing this regulator. When used on gas refrigerators and small appliances, a controlled heat input is assured regardless of changes in the supply pressure. It is pointed out by the manufacturer that when developing this new regulator, safety of operation and simplicity of design were given primary consideration. In describing the construction, it is disclosed that the body and cover of this regulator are aluminum die cast.

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FROM $6 WITH MEALS & BATH
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Per Person 2 in a Room
FOR RECREATION OR RELAXATION
Choose the Chelsea
Here you will find everything to further your comfort and enjoyment — outside ocean-view rooms . . . wide verandas for lounging . . . sun deck . . . beautiful dining room at the ocean's edge . . . superb cuisine . . . varied sports and entertainment. You'll like your fellow guests, too, and the delightfully friendly atmosphere of the Chelsea.
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Blue Gas Plants — Gas Purifiers
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GAS—1709 W. 8th Street, Los Angeles, California

Yes! SEND ME GAS *for* 3 Years at $2.00

SUBSCRIPTION RATES: United States, Mexico, Cuba, South and Central American countries (in advance), three years $2.00; all other countries, $3.00 per year.

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Catalogs

The Automatic Switch Co., New York, N. Y., has recently announced that their new catalog containing complete information on their products is now ready for distribution. The catalog is divided into sections, which may be had separately or all together, in the catalog. The section numbers, and their respective topics, are as follows: Section 3-V, safety shut-off and trip valves, manually reset; Section 4-V, shut-off valves, packless type, full pipe area; Section 5-V, shut-off valves, packed type; Section 6-V, plain shut-off, adjustable flow, and adjustable by-pass valves, packless type; Section 7-V, three-way pilot valves for air, gas, brine, freon, ammonia, and many other substances; Section 8-V, two-way and three-way external pilot controlled valves for air, gas and water; Section 9-V, four-way pilot valves; Section 10-V, strainers and filters. In addition, information may be had concerning explosion-proof solenoid valves and special solenoid-operated valves.

An illustrated eight-page booklet on the new Hycar group of synthetic rubbers, manufactured by the Hydrocarbon Chemical and Rubber Co., Akron, Ohio, is now available upon request to the manufacturer and is of interest to everyone interested in the general subject of synthetic rubber. The booklet is written in non-technical language, easily understood by those not directly in the rubber field. Hydrocarbon Chemical and Rubber Co. was jointly formed last year by The B. F. Goodrich Co. and the Phillips Petroleum Co. The booklet relates how the Hycar type of synthetic rubber is handled like natural rubber, describes the physical characteristics of Hycar O. R., an oil resistant type of synthetic rubber, lists the comparative properties of Hycar O. R. and natural rubber and pictures some of the steps in the manufacture of Hycar.

Entitled "Gas, Oil and Water for Millions of Moderns," a new booklet has recently been issued by the Dresser Manufacturing Co., of Bradford, Pa. This pamphlet, profusely illustrated, presents the history of the company, its organization, its products, and its markets. Full description of the plants of the four members of the Dresser corporate family—Dresser Manufacturing Co., Bryant Heater Co., Clark Bros. Co., and Pacific Pump Co. is given. The booklet is intended to present to the reader a complete view of the services that the Dresser organization are rendering to the gas, oil and water industries, and does so very well.

The Wailes Dove-Hermiston Corp., Westfield, N. J., manufacturers of "Bitumastic" pipe coatings, have recently issued a general catalog, entitled "Protective Coatings for Industry." The coatings described are divided into three general classifications; hot applied bitumastic enamels, cold applied bitumastic coatings, and industrial maintenance paints. Also included is a comprehensive "coating guide."

Five new bulletins on gas regulators have been issued by Reliance Regulator Corp., Alhambra, Calif. No. 37-A covers new developments in Pilot Types; Nos. 38-B and 41-B show improvements in regulators for house or service installations; No. 48-A presents high pressure regulators and No. 40-A introduces new models for the control of liquid petroleum gases.

Public Hearing Set for Nebraska Natural Sale

THE Federal Power Commission has ordered that a public hearing be held on April 2 concerning the application filed jointly on March 10 by Kansas Pipe Line & Gas Co. and Nebraska Natural Gas Co. for a certificate of convenience and necessity authorizing the Kansas company to acquire and operate all the properties of the Nebraska company.

The application states that the purchase price is $1,700,000, less the amount of cash shown on the books of the vendor and retained at the time of delivery of properties after deductions for Federal and State income taxes. Nebraska Natural Gas Co. of Topeka, Kans., owns and operates a pipe line system of some 255 miles, and sells gas at wholesale and at retail in Nebraska. The Kansas company, with offices at Phillipsburg, owns and operates a system of approximately 650 miles in the states of Kansas and Nebraska, selling gas at town borders and at retail.

■ ■

Industrial Gas Consumption Shows Large Gain

Particularly significant in utilization of natural gas has been the phenomenal rise in industrial consumption. In 1926, approximately 1.02 trillion cu. ft. of natural gas were used for all industrial purposes, including field operations and manufacture of carbon black; in 1929 industrial utilization had increased to 1.56 trillion cu. ft.; in 1932 a new low of 1.17 trillion cu. ft. was reached, but by 1937 industrial utilization had increased 69% from the low of 1933.

■ ■

Republic Builds Line In Oklahoma Panhandle

The Republic Natural Gas Co., Corpus Christi, Texas, is building a 21½-mile pipe line in the Guymon sector of the Hugoton district, Texas County, Okla., to connect to properties recently purchased and to increase outlet for the sector.

It is reported that Republic Natural has purchased from A. J. Hardendorf the Wiggins gas wells in Texas County, about a mile southwest of Guymon, which have been shut in since they were drilled in 1938.

■ ■

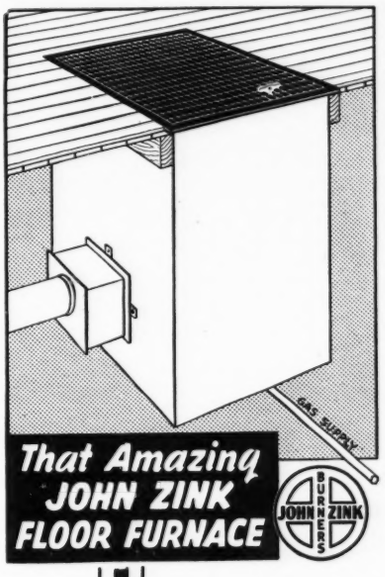
Pittsburgh Equitable Meter Acquires National Meter Co.

President W. E. Rockwell of Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has announced the purchase of the assets of the National Meter Co. of Brooklyn, N. Y., thereby bringing together under one management the facilities of two of the country's important meter manufacturers. The National Meter plant will be operated as a division of the Pittsburgh Equitable Meter Co.

■ ■

Paris Gas Firm Awarded Permit to Build Line

The River Valley Gas Co. of Paris, Ark., obtained a permit from the state utilities commission recently to construct a five-mile transmission line in the western Arkansas fields in order to purchase additional supplies of natural gas from the Arkansas-Oklahoma Gas Co.



That Amazing JOHN ZINK FLOOR FURNACE

John Zink . . .

Floor Furnaces must be good!

NEW Offices and Warehouses opened at

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and

HOUSTON, TEXAS

So enthusiastic has been the acceptance of John Zink Floor Furnaces for home heating that during the first year more than 4,000 installations were made. Due to this acceptance and our desire to make more readily available this amazing floor furnace we have opened these new offices and warehouses.

Write for Descriptive Literature

JOHN ZINK COMPANY

4401 South Peoria Avenue
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MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Eventlow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and similar equipment. Write for description and prices.

MUELLER CO., Los Angeles, Calif.

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco

Southern California Gas Co. Reports 1940 Growth

AGAIN of 38,203 independent active gas meters during the year 1940, largest in many years, was reported to Southern California Gas Co. stockholders by F. S. Wade, president, in the 74th annual report of the company and its predecessors, issued in March. Number of active meters in service as of December 31, 1940, was 765,353, a gain of 5.3% over 1939.

Total value of building permits issued in territory served by the company for all classes of structures in the 12-month period ending December 31, 1940, was in excess of $142,500,000, the report stated. This was compared with a permit value of only slightly over $131,500,000 for the preceding 12-month period.

Dwelling units completed during the year totaled 39,336, Wade stated, in discussing the company's sales promotion efforts, and gas burning appliances were installed in them in the following proportions: gas house heating appliances, 99.7%; gas water heating appliances, 94.7%; gas cooking appliances, 91.6%; gas refrigerating appliances, 17.9%.

Estimated sales of gas appliances of various types through dealer and company outlets was shown as follows: ranges, 76,800; water heaters and refrigerators, 92,900; central heating plants and floor furnaces, 30,480; space heaters, 85,600.

Major additions and betterments to the system completed during the year included large size transmission, production and distribution lines aggregating 28.5 miles, two 125,000 cu. ft. holders and one 500,000 cu. ft. holder. Under construction at year end were: a six-story headquarters annex in Los Angeles, a new branch office in Los Angeles, houses for employes at outpost stations, two 500 000 cu. ft. holders and one 250,000 cu. ft. holder. Gross cost of this work amountedto $5,905,842.

■ ■

Indiana Gas Utilities Corp. To Sell Distributing System

The Public Service Commission of Indiana recently closed the hearing on the Terre Haute, Ind., gas case, which concerned the petition of the Indiana Gas Utilities Corp. to sell its gas distributing system in Terre Haute, West Terre Haute, Brazil and Clinton to the recently organized Terre Haute Gas Corp. The price was set at $1,250,000. L. E. Ingham, vice president of the Kentucky Natural Gas Corp., an intervenor in the petition, testified that his company was prepared to deliver natural gas to the Indiana Gas Utilities at a lower price than that paid to the present manufacturing corporation.

■ ■

Recycling Plant Planned For Texas Field

Geier Brothers, Inc., and F. B. Jackson, in partnership, of Dallas, Texas, have recently announced plans for a 53,000,000 cu. ft. daily recycling plant for the Grapeland gas-distillate field in Houston County, Texas, the fourth in that area. They recently obtained about 3000 acres in the area on farm-outs from several companies and have under way a drilling program that is expected to total around eight wells to the 6000-ft. Woodbind sand.

The final chapter in the saga of Southern California Gas Co.'s Palm Springs holder, the odyssey of which was told in the December, 1940, issue of GAS, was written recently with the completion of the camouflaging job shown above. Moved a mile across the desert so that it would be out of sight of Palm Springs, the holder is now merged into the hill by a skillful blend of desert colors. J. P. Carroll, Los Angeles paint contractor, did the job after an exhaustive study of the shadows and colors in every kind of light.

Memphis Natural Ordered To Suspend Rate Increase

The Federal Power Commission has suspended for a period of five months the schedule of proposed increased rates for natural gas sold by Memphis Natural Gas Co., Memphis, Tenn., to the Mississippi Power & Light Co., Jackson, Miss., and has ordered that a public hearing be held in the matter in Washington on May 1, 1941.

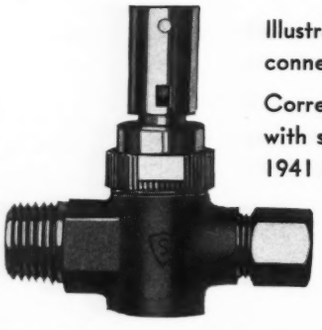
Memphis Natural Gas Co., in purported justification of increased rates, stated that it desired to be compensated in part for periodic increases in the cost of gas to it that may result from modification in charges to be made under the company's gas purchase contract with United Gas Pipe Line Co. Recently, the company stated, there has been a modification of this contract which increased the cost of gas at the rate of one-fourth of a cent per thousand cubic feet and that consequently the increase in the rate to Mississippi Power & Light Co. is justified.

■ ■

Payne Furnace & Supply Co. Adds New Building

To date, three main buildings have housed the offices and principal manufacturing equipment of Payne Furnace & Supply Co. in Beverly Hills, Calif. Now the Payne Company plans an entirely new structure to be added to the building which has previously been used as the testing laboratory. When completed the new building will comprise 30,000 square feet of floor area and will permit a more efficient production arrangement. New machinery and the most modern methods will speed production of all Payne products.

FLOOR FURNACE PILOT VALVES



Illustrated is No. 777-91, 1/4"male x 1/4" O.D. tube connection, with swivel socket head.

Corresponding Floor Furnace Main Burner Valves with swivel socket heads are described in our new 1941 catalog, available upon request.

The W. J. Schoenberger Co.

CLEVELAND, OHIO

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Keep abreast of the fast-growing L. P.-GAS Industry! Enter my subscription to start at once.

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Calif. Council of Defense Appoints 'Committee on Gas'

ACTING on behalf of the State Council of Defense, a Committee on Gas has been appointed to study the gas situation in California and examine the important defense implications arising from increased demands on the industry. The following leaders make up the committee:

Ray L. Riley, chairman, California State Railroad Commission.

B. M. Woods, ex-officio chairman of the Committee on Transportation, Housing, Works and Facilities, California State Council of Defense.

Richard Sachse, director, State Department of Natural Resources, Sacramento.

James B. Black, president, Pacific Gas and Electric Co., San Francisco.

F. S. Wade, president, Southern California Gas and Electric Co., Los Angeles.

H. L. Farrar, president, Coast Counties Gas and Electric Co., San Francisco.

LeRoy Edwards, general manager, Industrial Fuel Supply Co., Los Angeles.

L. M. Klauber, vice president, San Diego Gas and Electric Co., San Diego.

E. S. Bryant, city gas engineer, Long Beach.

L. H. Anderson, president, California Municipal Utilities Association, Palo Alto.

E. W. Kramer, regional director, Federal Power Commission, San Francisco.

C. O. G. Miller, president, Pacific Lighting Corp.

The Committee on Public Utilities already has studied the electric power situation in the State and examined the important defense implications arising from war conditions, and the newly appointed committee is expected to make a similar study of the gas situation.

■ ■

Golden Anniversary for Edison Employes Group

Consolidated Edison of New York Employes' Mutual Aid Society, Inc.—one of the pioneer organizations and one of the largest of this type in the country, celebrated its golden anniversary recently. A dinner was held at the Hotel Astor for officers and members of the board of managers, past and present, a feature of which was a huge birthday cake symbolic of the half century of existence of the society. Among those in attendance was Richard Shepard, one of the nine living charter members, and many officers of the companies represented in the membership of the Society.

■ ■

Canadian Company to Build 100-Mile Gas Pipe Line

Completion of financing in New York has now paved the way for the construction of a pipe line over 100 miles in length from the large Kinsella gas field near Viking, Alta. to Red Deer, Alta. through Camrose, according to an announcement by E. W. Bowness, Calgary, vice president of the Canadian Western Natural Gas, Light, Heat and Power Co. of that city.

The pipe line will provide Wetaskiwin, Ponoka and Red Deer with natural gas for the first time, as well as a number of smaller communities along the route of the new line.

■ ■

Corsicana, Texas, Grants Natural Gas Franchise

The city commission of the City of Corsicana, Tex., recently approved a contract with the Community Natural Gas Co., Dallas, for a 20-year franchise involving a total consideration of $100,000 in addition to the regular ad valorem levies. The company's previous franchise expired in June, 1940.

The Complete Answer

To Your Gas Line Requirements—

THE CLEVELAND BABY DIGGER

MODEL 95

Equally Efficient for Long Line Trench or City Distribution

Literally thousands of miles of completed work have proven the correctness of the "Baby Digger" design. The forerunner of all full-crawler trench excavators, the "Baby Digger" stands supreme as a compact, light weight, easily transported trencher. With it you have the best chance to machine dig your work. Compact, fast, flexible, powerful and with all dead weight eliminated, the "Baby Digger" exactly meets conditions, whether it's a cross-country transmission line or a short service extension in the city.

Easy to operate and transport and with the built-in qualifications to resist wear and abuse, the Baby Digger represents the utmost in economy and efficiency and assures maximum machine usage. Only the Baby Digger gives you such power, speed and strength and such a wide digging range in such a small package. Write today for complete details on these modern most usable "Cleveland."

THE CLEVELAND TRENCHER CO.

"Pioneer of the Small Trencher"

20100 ST. CLAIR AVENUE CLEVELAND, OHIO

MECHANICAL-JOINT CAST IRON PIPE

WITH or WITHOUT BOLTS

Acipco was a pioneer developer, and now offers the gas and oil industry a choice of TWO kinds of mechanical-joint cast iron pipe: Mono-Cast Doublex Simplex Pipe (bolted) and Mono-Cast Boltless Simplex Pipe. Both types are bottle-tight at high pressure, easily installed, economical and thoroughly dependable. Write for literature.

AMERICAN CAST IRON PIPE CO.

BIRMINGHAM, ALA.

Dallas Houston Chicago El Paso Pittsburgh Minneapolis Kansas City

New York City Cleveland Los Angeles San Francisco

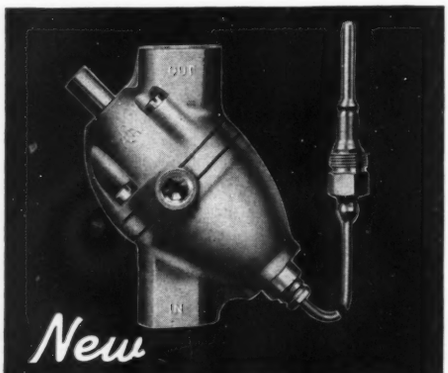
A *Joy* TO OWN ★

A Money-Maker for the Dealer!

★ "Pacific" Model A-80 Furnace is built in two easily handled sections. Interchangeable casing panels and reversible blower permit quick transposition of Heating and Blower Units in the shop or on the spot. It saves the dealer effort, time, money. The customer gets a gas-heating and ventilating unit of utmost efficiency, low cost operation, long reliable service and *lower initial cost*. Profits will get a *lift* with "Pacific" A-80 Furnace, the 1941 money-maker. Write for Catalogue.

PACIFIC GAS RADIATOR COMPANY
Huntington Park, California

Pacific
27 Successful Years and still growing!



New
BASO
SERIES 800 VALVE

3/8" AND 1/2"
STRAIGHT THRU
OR ANGLE TYPES

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Milwaukee Gas Specialty Company
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Retirement Annuity Plan For San Diego, Calif., Company

THE newly instituted retirement plan of the San Diego Gas & Electric Co. became effective on January 1, 1941. The plan is to be administered by the Equitable Life Assurance Society and makes eligible all regular employees who have reached their thirtieth birthday after one year of continuous service. Both employee and company contribute to the annuity, the employee contribution being approximately 2½% of the first $1200 of annual earnings, 3¾% of the next $1800, and 5% of all earnings over $3000. The company's contribution will exceed that of the employee. For service prior to 1941 the company will at its own expense contribute to the purchase of past service annuities in so far as its future financial position may permit.

The plan, together with benefits from the social security program, should provide a retiring employee, who has had a reasonably long service record, with a life income of approximately 60% of his normal earnings.

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Indiana Utility's Heating Customers Up 50% in 1940

Increases in the number of customers and in the use of gas by consumers were shown in the annual report to stockholders of the Northern Indiana Public Service Co., Hammond, Ind., issued recently by Dean H. Mitchell, president.

Sales of gas increased 6.3% in 1940 over 1939. Industrial gas sales increased 24%. The total number of gas customers increased 3821, and the number of gas home heating customers increased 50% during the year.

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Allowable Production Set For Oklahoma City Field

The Oklahoma conservation department of the Corporation Commission has reported that, as a result of recent tests, there are 107 gas wells with a total potential of 273,589,000 cu. ft. daily, in the Oklahoma City field. Total allowable production was fixed at 85,416,000 cu. ft. daily.

These wells are completed in 11 zones: The Oswego, Prue, Layton, Tonkawa, Carmichael, Oolitic, Pawhuska, Hoover, Simpson, Cleveland and Oswego-Prue.

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Giant Gasser Defies All Calculation Efforts

Said to far surpass any other well known to the oil and gas fraternity even under the most conservative estimates, the Oklahoma Natural Gas Co.'s mammoth gas well on the Sanford lease in the Chickasha field, near Chickasha, Okla., recently defied the calculations of engineers who sought to obtain a gage on the well. According to O. P. Elkins, field manager for Oklahoma Natural, engineers using the approved back pressure method had gotten nowhere, as the charts prepared for use with this method did not go high enough. Mr. Elkins said that the well would go far beyond the 300,000,000 cu. ft. volume estimate that he had previously made.

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■
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Wisconsin Public Service Files for Bond Issue

Wisconsin Public Service Corp. has filed application with the Public Service Commission of Wisconsin covering the issuance and sale of $26,500,000 of 3¼% series, first mortgage bonds, due 1971, and 132,000 shares of 5% preferred stock at $100 par value, according to J. P. Pulliam, president of the company.

The Wisconsin Public Service Corp. renders gas service to the communities of Sheboygan, Two Rivers, Chilton, Green Bay, Oshkosh, Stevens Point, DePere, Kiel, New Holstein, Kohler and Peshtigo, in Wisconsin, and Menominee and Marinette in Michigan.

■ ■

Unusual Natural Gas Deposit In Michigan Rock Salt

F. R. Frye, Michigan State Petroleum Engineer, declared that oil and gas men and geologists alike are amazed at the geological implications made as a result of a natural gas strike at the Bateson No. 1 well in Bay County, Mich., which recently was the scene of a spectacular gas fire.

Frye said the gas, brought in at about 7700 ft. below surface, was found in rock salt, the first such condition reported in the state.

"It's very unusual," he said, "and I personally never heard of it before. Rock salt is like concrete, and would be nearly the last place for natural gas."

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Topeka Gas Service Co. Electrolux Agent

The Gas Service Co. at Topeka, Kan., recently became the direct agency for Servel Electrolux gas refrigerators in that city. A crew of four salesmen has been formed in the Topeka new organization to specialize on the sale of the refrigerators.

Robert Moore, engineer of the field service department of Servel, Inc., of Evansville, Ind., held a service school for members of the Topeka service department, instructing them in the proper installation of Electrolux gas refrigerators.

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Moss Point, Mississippi, Awards Contract

The City Council of Moss Point, Miss., recently awarded a contract to Boh Brothers Construction Co. of New Orleans, for the construction of a natural gas transmission and distribution system in that city. The low bid of Boh Bros. was $62,683, it was revealed.

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Gas for Tuttle, Okla.

The residents of Tuttle, Okla., recently granted to the White Gas Co. a franchise covering the serving of natural gas in that city by a vote of 83 to 5.